TEXTILE BULLETIN

VOL. 60 JUNE 1, 1941 NO. 7

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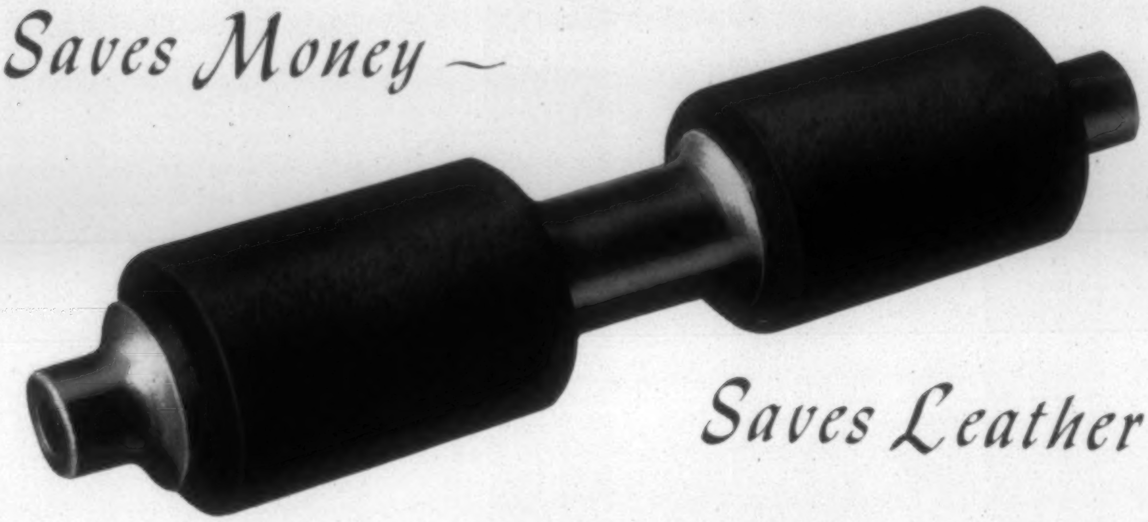

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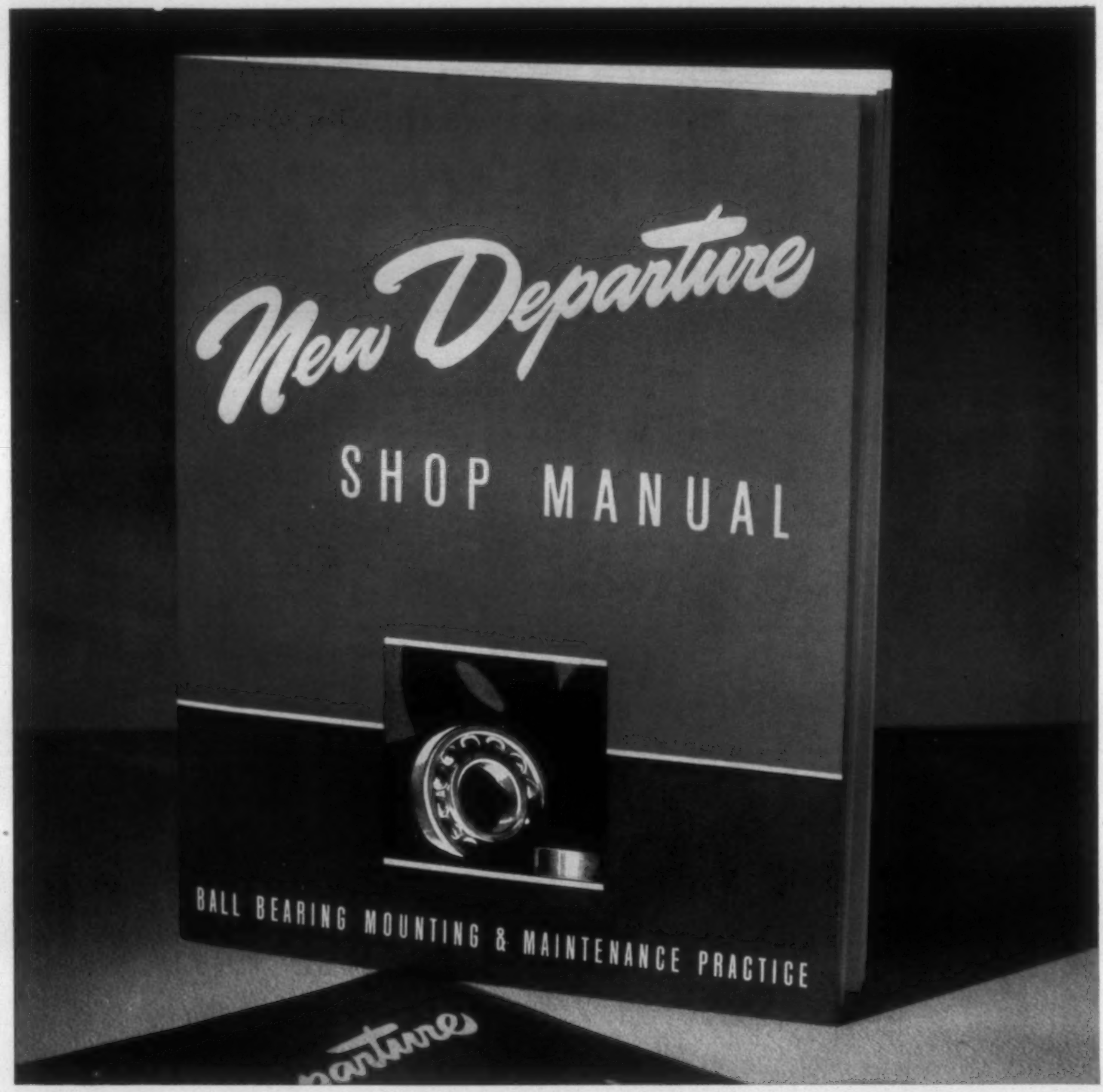

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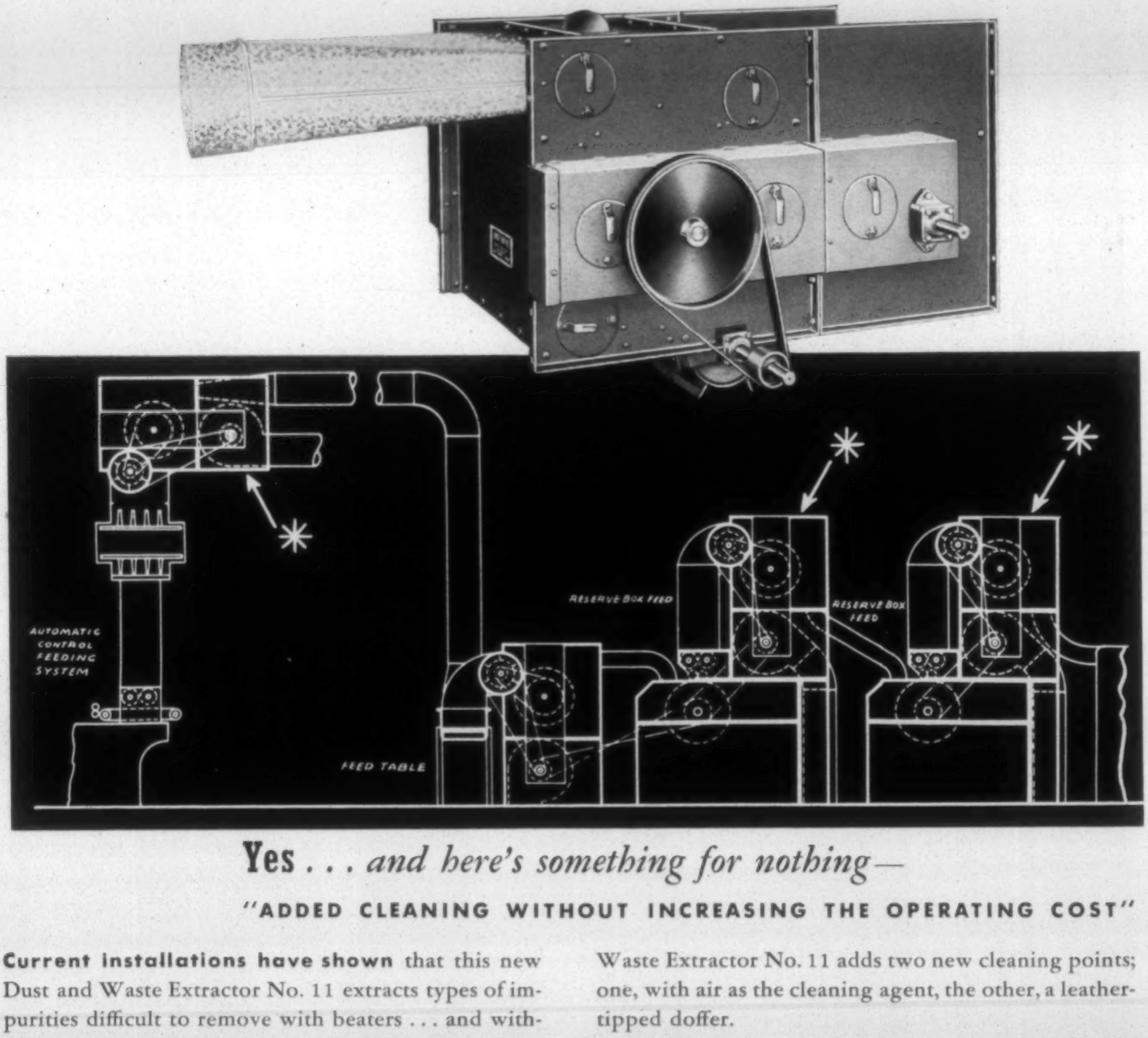

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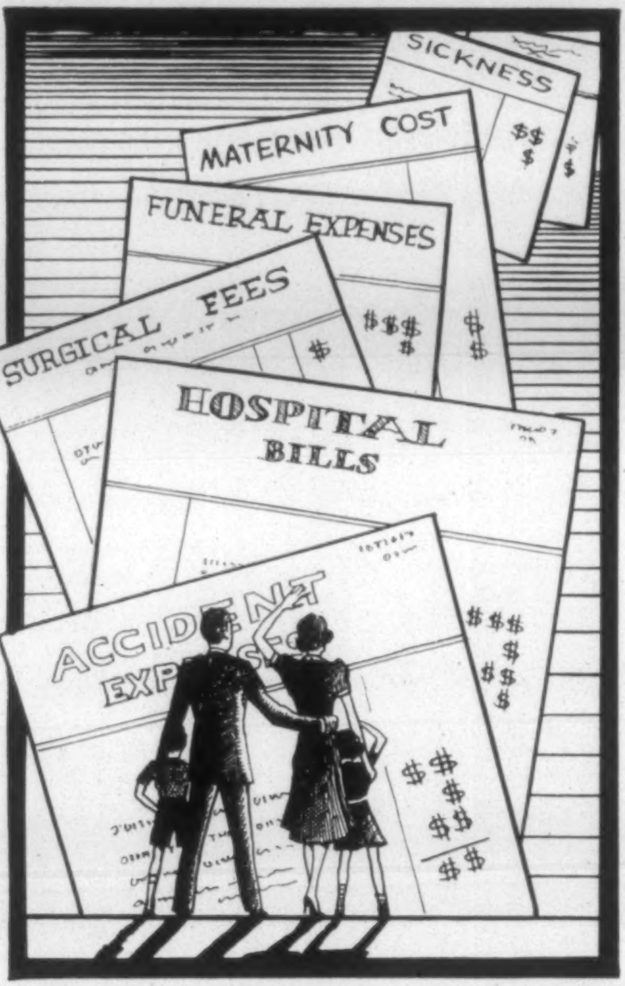

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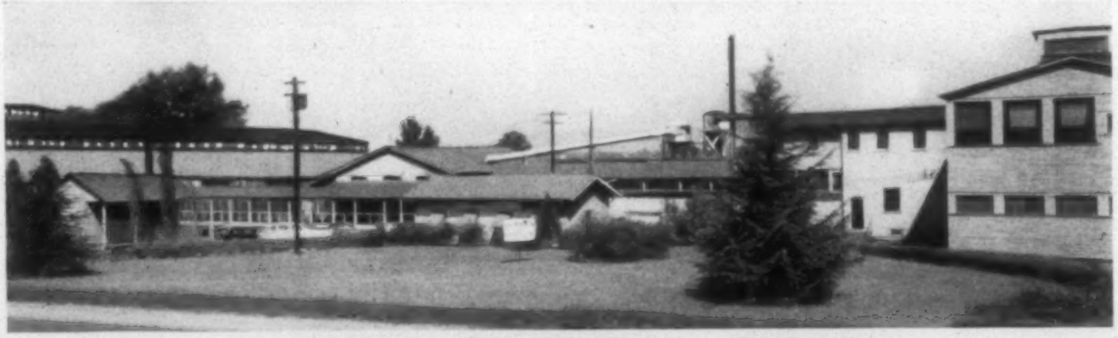

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Guest Editorial

PROBABLY the three greatest assets industry has today are its employees, customers and the general public. The success or failure of a concern largely depends on its investment in these assets.

Industry in the South, the textile industry in particular, has been falsely accused, as we know, of having a paternalistic attitude toward its employees. This word has been used very loosely and does not give a true picture of conditions as they actually exist.

Textile employees have their own thoughts to which they are justly entitled, and absolutely no effort is made made to try to dictate or govern their personal lives. A very strong effort is made, however, to see that every opportunity is given them to secure full and complete information on any topics vital to them. Through these efforts a better informed citizenship is being developed, and through this each employee should feel his responsibility to his community or plant and also to his fellow workers as well.

It has been truly said that Southern employees cannot be driven but with proper leadership in which they have confidence they will go through fire. How best can this confidence be established? Only through contacts at every opportunity can a sympathetic understanding and confidence be developed. Some of the ways are with individuals in our offices discussing their joys and sorrows as well as problems, of which they have many, and by attending various community activities.

As I write this I am reminded of three important engagements I have for tonight. One has to be chosen. The one I have chosen is the closing of our community school. The responsiveness of our people on such occasions makes it a genuine pleasure to be with them. These contacts are a personal responsibility of the major executives and cannot be delegated.

The Administrator of the Wage and Hour Law is considering the elimination of deductions from the pay of textile employees. If any cases exist in the Southern industry where the charges for services are excessive, they are very rare. On practically all items there is a decided loss. Should such a ruling be made, we all know too well what a very great hardship it would work on our people.

The customer is always right. That is a familiar expression to all. It cannot be taken at face value with all customers. There are some who would not take advantage of it and those are entitled to a very liberal interpretation on adjustment of any claims that might be made, and settlements fair to both parties can be made without difficulty. As a good will builder it is hard to equal. The customer who has nothing but complaints is the one who has to be considered as never right, and the best way to handle such a one is to simply discontinue business relations.

The general public or public relations, as it is usually called, deals with a much larger group and more varied ideas.

Public opinion for good or bad is created in a good many ways. Each employee, no matter how high or low, should have impressed on him that in dealing with an outsider the concern with which he is connected is judged by his attitude.

A traveling salesman has many contacts. This should be given due consideration in our dealings with him. Proper courtesy to him is of great value in many ways.

Jno. W. Arrington, Jr.

Vice President and Treasurer

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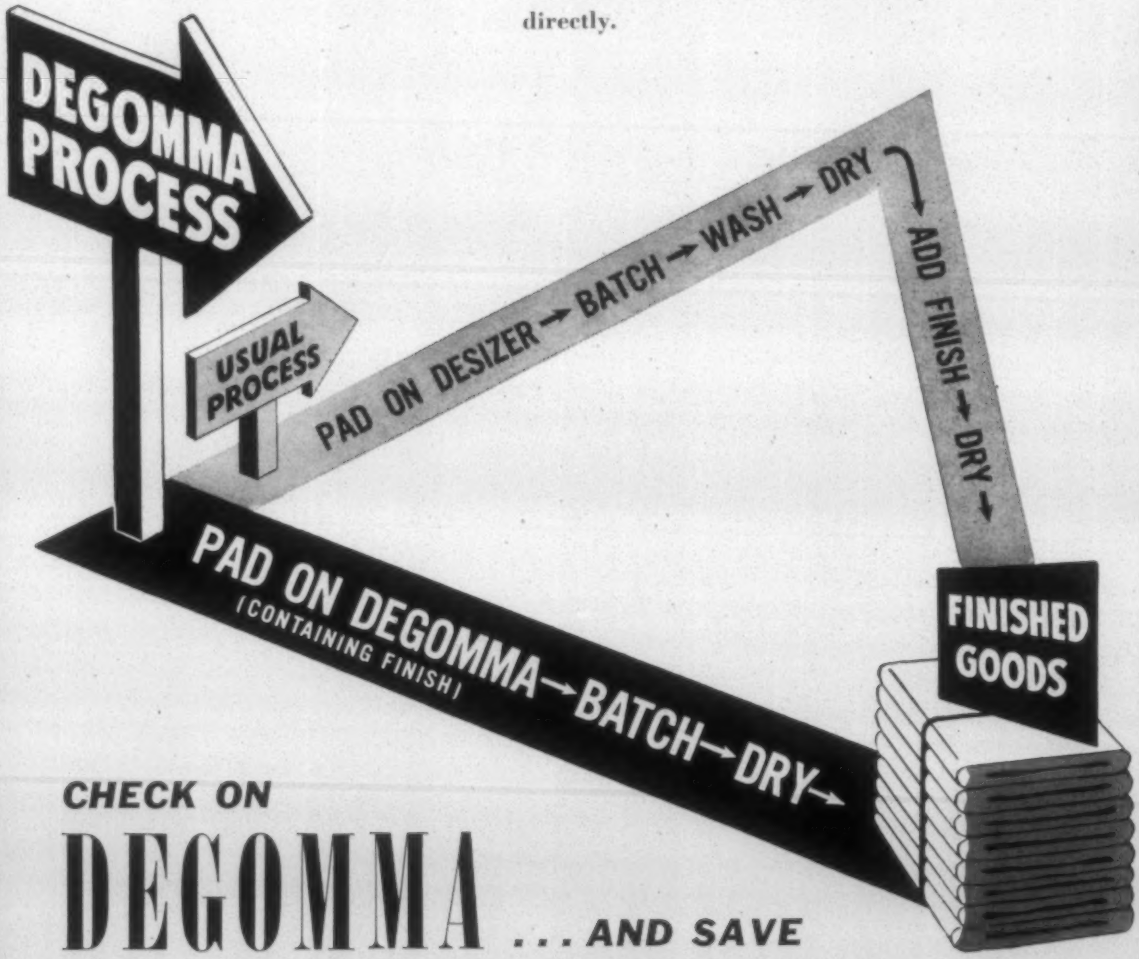

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TEXTILE BULLETIN

Member Audit Bureau of Circulations

Vol. 60 June 1, 1941 No. 7

Some Suggested Improvements in Efficiency Engineering in the Textile Industry

By E. A. Lucey

In the following article, prepared by Mr. Lucey, Consulting Engineer, for reading before the senior engineers class at Lowell Textile Institute, the writer makes some interesting observations on efficiency engineering as applied to job assignments, particularly in weaving. By making certain adjustments, Mr. Lucey says, "The mill owners can get a production increase of ten or more per cent, without an increase in investment, and can at the same time get all production at a lower cost per unit."

THERE has been a very great advance in cotton textile mill operating efficiency since the first World War and, as is often the case, the research work that brought about the improvement was practically forced on the industry because of adversity. The general drop in business in the early twenties left the mills without enough volume to absorb expenses. Surpluses, built up for a rainy day, and even working capital, were being dissipated.

Many mills in the North had been in poor shape for years. However, the generally accepted idea that these companies had not kept their machinery and equipment up to date because their large profits were all paid out to stockholders is an overstatement. Most mills had not made enough money to improve either their physical properties or their organizations. There were several reasons for this and two of them stand out sharply. 1. Cotton cloth, and especially the cheaper grades, had been sold at too low a price. 2. The selling policy tempted mills to buy raw materials on a speculative basis.

Most of the cloth was sold, in the grey, to converters who controlled the situation to the extent that they told the mills what they would pay. Because of this, prices have been kept at a level that has been nearly ruinous for the mills.

The selling policy that was followed, fixed prices for yarns and fabrics at figures based on the closing price of cotton for the day before. Even though a mill were well run from a production standpoint, it often lost money because someone had guessed wrong on the buying of cotton. As a result, many banks found themselves owning mills that they did not want and could not operate as well, with hired men, as they had been operated by the former owners.

There were three things that made it possible for some mills to continue in business. 1. It was a fact that many other mills were in the same position as far as the condition of their machinery and equipment was concerned. 2. A friendly tariff policy kept rates high enough to cover the poor conditions that existed. 3. The buying of cotton was made safer with the protection of hedging.

New mills which had been built in the South were, of course, more modern in every respect and were able to make a profit more easily than their older competitors. Because of this many Northern mill owners decided that they must improve their positions through the addition of new capital. The next decision often made was that it would be better and cheaper to build a new mill than to try and rebuild the old one. In the majority of cases the third decision was, that the new mill should be built in the South. Thus from shortly after the turn of the new century more and more cotton textile manufacturers moved from the North and consequently the South has had a wonderful development in this industry.

During the entire research period the civil engineer, the mechanical or mill engineer and the machine builder have all played important parts and have done excellent work. Better layout of buildings and departments, improvement of heat and humidity controls, increase in size of packages, mechanical conveying of materials, the addition of more and better automatic features, have helped to increase the production and decrease the cost of operation. These innovations have made cotton textile mills profitable once more. But they still do not make a profit large enough to pay a decent return on all the new money invested and at the same time make it possible to correct the very bad wage position of the industry.

While the position of the mill owner has been improved, it is certain that the mill worker has not fared as well. The period of research and development offered a challenge to raise the wage position of one of the lowest paid industries in the country, but the opportunity was ignored. Certainly an industry that pays no more to its most highly skilled workers, than several other industries pay to beginners is not in a healthy position. Instead of wage increases, to encourage the worker at a time when he was asked to take new and larger work assignments, a program of wage saving was started. In many instances this was ill advised, as it can be shown that it increased total cost and brought disappointment and unhappiness to the workers.

If the human relation problems had been given as much expert study as manipulation of fibres, improvement of machines and building layout plans, then a happier situation would exist today.

Assignments Made Haphazardly

All too often the job of getting the highest production at the lowest wage cost was put up to the practical mill supervisors. The implied threat that, if they did not get busy and do it quickly, outside "efficiency" engineers would be put into their departments to do it, urged them on. The thought that anything done by an outsider would "show them up" forced them to decide such questions as, how many machines a worker could run under the changed conditions. Although they had no idea of how to study such a problem they had heard of the large number of machines per man assigned in mills where "engineers" had been engaged to do the work. Therefore, they guessed that their workers could run as many or more and proceeded on that basis.

In some cases men from companies that make a business of setting rates, by time study methods, were employed and put into the productive departments.

In other cases research engineers, who had done excellent work on process development for a mill, were asked by the mill's management to take over the work of rate setting. Although they were not at all fitted by experience to do such work, many of them accepted the responsibility and started to copy the work of the time study engineers.

Even firms of accountants were sometimes allowed to do this work.

Valuable work has been done through scientific management methods and management engineers have made great contributions to the modern methods used in many industries, including the textile industry. But a managemen tengineer's work should only be that of a consultant or an advisor to any company's own organization. Only a company's own organization can possibly know its products and their quality requirements, its employees and the relationships that have been built up over a long period of time. No outsider should ever be allowed to do work with the employees in the productive departments, as friction with both the supervisors and the workers too often comes from such a practice.

The dissatisfaction among the employees during the research period and ever since and the large amount of adverse publicity given to the so-called cotton textile "stretch-out" system can be traced to two things. 1. The wage consciousness of the mill owners. 2. The methods used by those entrusted with the job, or employed for the job, of rate setting.

Proper Handling of Study Important

Before writing more on this subject it would be well to explain that we believe firmly in modern management methods and believe that proper rates can only be set after detail studies. In support of this we can say that we installed pick clocks on every loom in a large mill as far back as 1906, set rates based on detail studies and paid wages on picks thrown instead of on yards woven. Since that time we have made studies on every operation in a great many mills. We have changed over mills from plain looms to automatics and have supervised the setting of rates on thousands of looms on cotton, wool, worsted and silk goods and on fabrics ranging from plain weaves to Jacquard tapestries and upholsteries. Therefore we cannot be counted with those who knock the "stretch-out" system simply because detail studies were made. But there is a very great difference in the way studies can be made and in the use that can be made of the information developed from them. Put to good use it can mean, increased production, increased wages, decreased cost, and both owner and employee satisfaction. But when it is mishandled, low production, no increase in wages, increased cost and employee resentment, will be the result.

Although studies were made on all operations in the mills, we will confine our discussion almost entirely to the studies made and rates set on weaving, as, not only more workers, but also, more highly skilled workers were affected on this operation than on any other.

Loom Cost $1.00 to $1.50 Per Day

It is probably natural that men who have been in textile mill management all of their lives, should have inherited, from their fathers and grandfathers, a wage conscious complex. The cost of owning and maintaining a cotton loom, in readiness to run, varied from mill to mill, from $1.00 to $1.50 per day. When weavers ran two looms and received two dollars per day for wages, the wage cost per loom was nearly equal to the loom expense and was quite a sizable portion of the total cost per yard. Knowing this, it is easy to understand why the mill owners of the past checked their wage costs constantly.

The cost of owning and maintaining a loom as referred to above is made up of building items, machine items, and supervision. Building items, or rent of floor space, consist of, interest on the investment in buildings, taxes, insurance, depreciation, upkeep, light, heat, etc. Machine items consist of, interest on the investment in machines and their necessary equipment and accessories, taxes, insurance, depreciation, maintenance, supplies, power, etc. Supervision and indirect labor items consist of, the portion of the salaries of officers that is chargeable to mill operations, office expense, salaries and wages of mill manager, superintendents, foremen, second hands, loom fixers, supply men, clerks, sweepers, scrubbers, etc.

The costs of owning and maintaining are higher today than formerly. The investment is higher, taxes are higher, there are more services and controls to keep up. The cost varies according to location, type of mill, type of goods made, and for many other reasons. We have seen variations of from $1.00 to $3.00 per loom. For the purpose of example only, and not because we believe it to be a fair average, we will proceed with the assumption that the loom expense, as figured in the manner suggested, is $2.00 per loom per day.

It is fair to say that weavers in the South average around $3.50 per day, although the amount varies in different sections. When a weaver is given 40 or 50 or 60 looms to run there is a wage cost per loom of 8¾ or 7 or just under 6 cents per loom.

With a loom expense of $2.00 and a wage expense of 6 cents the relation of wage cost to loom expense has been changed to a point where the wage cost is a very small part of the total cost. Since this is so evident, it is hard to understand why such emphasis was placed on wage saving. It is a fact, however, that none of the many mills for which we have done consulting work had ever thought of expense in terms of individual machines and work spaces. We are forced to assume that mill owners considered, that after spending so much money on improvement of buildings, machines, equipment and controls, everything was as good as possible except work rates.

Because of the emphasis placed on wage saving the rate setters went about their job on the basis of finding out how much work a weaver could do in a day, and how many looms it would take to give him that amount of work to do. This basis should of course show the lowest possible wage cost per loom. Time studies were made to find out how long it takes to piece up an end when a warp thread breaks, how long it takes to start up a loom after a filling thread break, etc. Then studies were made to find out how many ends broke per loom per day and just what other things had to be done. When all these things were known, a decision was made as to the number of looms a weaver should be given. Then all the weavers were told that they had to run that many looms and they were instructed to make a continuous round of their looms, proceeding in a clockwise direction. (Right here we would like to say that to refuse to grant the weaver permission to turn back to any loom as soon as he sees it is stopped, is an admission that several looms must be stopped all of the time.)

We will prove that this whole basis of figuring was wrong and that the real things to determine are as follows:

1. How to make the weaver's time as available as possible so that he can do the necessary work right after a loom stops.

2. How to get the highest production that is possible from each loom that a weaver runs and not the largest amount of work from the weaver regardless of the production of the machines.

3. How many looms a weaver can run at the production which will show the lowest *total cost* per yard and *not* the number which will show the lowest *wage cost* per loom.

There is a great difference both in the basis of figuring rates and in the results obtained after rates are put into operation.

The amount of actual time study work needed to be done in studying a weaving job is very small. The number of different things the weaver has to do is very limited, and the amount of time taken on each thing is very short. It takes less than a minute to piece up a warp end, whether the break is in front of, or behind, the harness. It also takes less than a minute to start up the loom if it has stopped because of a filling break. After these times have been once determined they can be used over and over again, even in different mills.

When this actual time study work is completed the remainder of the work is an observation study, to find out the number of things that happen per loom per day and what causes them to happen. We have proved by long experience that a good loom fixer or a good weaver can make this part of the study far better than any time study engineer, or clerk, who is not a weaver. First, they know the job so well, the reason for each loom stop is apparent to them immediately. Second, they are known to the other workers and their knowledge and the result of their observations is respected.

When we have, from a study, a fair average of the number of things that may happen and know how long it will take to fix each of these things if it does happen, we have an interesting example in arithmetic in front of us. But if we want to get the best results, it is not one that

(*Continued on Page 37*)

RAYON THROWING

By R. Bouvet

AS a preamble to the practical discussion of rayon throwing, I would like to say a few words about the definition and origin of throwing. The term "throwing" comes from an old Saxon word meaning twisting. Today, the term throwing is applied, collectively, to the several, separate, and distinct operations, by which threads are converted into twisted yarns for knitting, weaving and sewing.

Throwing, therefore, is the art, consisting of imparting twist or turns to threads. This art is very old and had its beginning in the very remote past. In fact, it is so old that its fundamentals are the same in all parts of the world—so old that nothing really new has come to it for hundreds of years—except minor differences and special excellencies.

The spinning wheel is probably the first mechanical device known to have imparted twist and the spinning wheel embodies some of the basic principles found in today's throwing equipment; namely, a spindle, the rotation of which produces the twist and around which the thread is wound as it is twisted. Of course, the spinning wheel operator has a two-fold duty: one consisting of drafting the yarn to the desired size; the other, to incorporate enough turns, to obtain sufficient strength. Basically, an up-spinner as used by throwsters differs from the old spinning wheel in so far as its function is restricted to the imparting of twist.

Not so many years ago, throwster's activities were confined to the handling of silk. As far as can be ascertained, silk throwing began in the U. S. back in 1820-1830. At that time, several mills were operated in Connecticut for plying and spinning of silk. Very small spools were used and speeds were held very low. This business migrated from Connecticut to Pennsylvania in the late seventies. It remained a small industry for several years to come. Following the advent of crepe de chine and crepe georgette, the latter calling for fine silk crepes carrying up to 100 t.p.i.—and this takes us back about two scores of years—the spindleage of the throwing industry increased measurably. With the coming of rayon in the textile field and recognition of the ability of rayon to crepe, the throwing industry took on a far more important aspect. In today's modern manufacturing plants the throwing division runs a close second to the weaving division, not only as regards labor expended but also in connection with capital investment.

I have mentioned before that the term throwing applies to the several and distinct operations by which threads are converted into twisted yarns. What are those operations? What equipment do they call for? In order to answer these questions, in logical sequence, I have chosen to discuss the various steps to be taken to throw 100 denier rayon with 52 turns per inch.

First, the yarn must be secured in the proper form. Rayon destined for crepe throwing has generally been ordered from the rayon manufacturer in skeins because this type of package has proved most suitable to receive the crepe treatment necessary to control the action of the crepe. The size of the skeins is to be such as to permit even distribution of the treatment, uniform drying and satisfactory handling in winding. Small skeins are not desirable because of their high processing cost. Large skeins do not lend themselves to satisfactory sizing. The trade appears to favor half lb. skeins.

Applying Crepe Treatment

The next step is to apply a crepe treatment to the rayon while in the skein form. Before going into the application proper, let us consider for a moment the purpose of such treatment, also the various ingredients it requires.

A 52 T. rayon crepe thrown without crepe treatment can readily be woven warp and filling-wise, for the yarn will withstand readily the weaving abrasion and the cloth made with it will crepe. However, its pebble will be uneven, will show cracks, breaks, also spots or rather blotches practically void of crepe effect. The function of the crepe treatment is primarily to prevent the defects just cited.

Most important of all, the crepe treatment regulates and controls the pebble. It also provides a certain amount of protection against torsional and cumulative strain, minimizes the action of static electricity and lends a certain amount of protection against abrasion.

What does a soaking bath for rayon crepe consist of? Generally, a very large per cent of water—from 95 to 97%—the balance comprising ingredients such as oil, gelatin and tint.

For years, sulphonated vegetable oils have been widely used. In recent years, the possibilities offered by mineral oils are receiving careful attention.

Substitutes can be used in lieu of gelatin—almost all have film forming faculties. The impression largely prevails that film forming ingredients are necessary to control the action of rayon crepe. Extensive chemical researches, exploring the possibilities of new products, are likely to affect this impression from time to time.

Besides water, oil and gelatin, a small per cent of fugitive tint is added to the bath to help identify the yarn in subsequent operations.

A great deal might be said about the make-up of the

(Continued on Page 32)

"Ten dollar Summer Suits that will last five years"... yesterday it was a rash forecast. Today mills are weaving mixtures of Spun Rayon with other synthetic and natural fibers in interesting new patterns.

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BRANCHES AND DISTRIBUTORS THROUGHOUT THE WORLD

Wage and Hour Regulations Discussed at Reidsville Meeting

The first part of the report of the meeting of the Northern North Carolina-Virginia Division of the Southern Textile Association, held in Reidsville, N. C., on April 19th, was published in the May 15th issue. T. C. Pegram, of Erwin Cotton Mills Co., Cooleemee, N .C., presided, and the report consisted principally of an address on Labor Legislation by Forrest Shuford, Commissioner of Labor for N. C. At the conclusion of Mr. Shuford's address the floor was open for discussion, as follows:

Mr. E.: If a man goes to work at 12 o'clock at night and works eight hours, or goes to work at 12 and works six hours, and stays off eight hours, can he then go back and work for several hours more without violating the law?

Mr. Shuford: The law further provides this, which I did not mention. When a work day is divided into two or more periods, then the work done must come within one 12-hour period. In other hours, the employee must have 12 hours off.

Mr. E.: He has 16 hours off.

Mr. Shuford: Yes, but the two periods of work must come within a 12-hour period. You are breaking up your work there into two periods, and it is not coming within a 12-hour period.

Mr. E.: Then a man could not work on the third shift?

Mr. Shuford: What is that?

Mr. E.: If a man works on the third shift and goes to work at 10 o'clock and works until 6 in the morning, can not he come in at 12 o'clock Sunday night and work until 6 o'clock and then come in on Monday night at his regular time?

Mr. Shuford: His regular shift is from 10 to 6?

Mr. E.: Yes.

Mr. Shuford: Yes, he could do it then.

Mr. E.: If a man is getting only the minimum wage of 32½ cents and buys some fuel from the company, cannot you deduct the amount due for the fuel from his wages?

Mr. Shuford: If the company makes a profit on it, no. If you do not make a profit on it you can.

Mr. F.: Isn't the law interpreted that the cost part can be charged to the employee against the 32½ cents minimum, but the profit part cannot? Couldn't you separate the two?

Mr. Shuford: I have never heard that thing put in just that manner before.

Mr. F.: Wouldn't you allow the cost portion of it to be charged against the 32½ cents?

Mr. Shuford: If there is a profit made on the transaction and the deduction brings it under the minimum you would not be able to deduct it. I do not believe you would be able to separate it.

Mr. G.: I believe the answer to that is that if you are charging $5 a ton for coal, $1 of which is profit, if you drop that profit then you can charge the $4 against the 32½ cents.

Mr. Shuford: Yes. Anyway, the textile people tell me they do not make a profit on coal.

Mr. H.: Is the cost the amount you pay the coal people, or what?

Mr. Shuford: You are allowed any cost you have in the transaction. Any cost you incur is cost, whether it is the cost of buying it or the cost of delivering, or whatever it is.

Question: Is the overhead for keeping the records of the transactions, etc.?

Mr. Shuford: Yes, but the trouble there is that you may be inclined to run up that overhead too much.

Mr. I.: What about house rent? How is it determined that there is a profit or not?

Mr. Shuford: Well, you have to take into consideration the cost of the house (that is, the investment in it), the cost of its maintenance, and your income from it. There are various things that go into a cost-accounting system.

Mr. I.: What percentage on the investment are you allowed before it would be called a profit?

Mr. Shuford: What percentage?

Mr. I.: Yes. Suppose you have a house costing $600. What percentage would you be allowed on that before it would be called profit?

Mr. Shuford: I may be wrong about it, but I think it is 5½ per cent. I have not looked it up lately. Is that right, Frank?

(*Continued on Page 42*)

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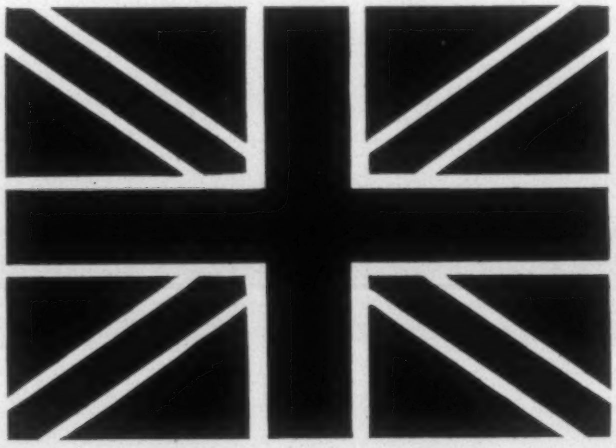

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Cotton Mill Production Formulae

By John T. Kersey

Written largely for use by the beginner, or mill worker interested in advancement, the following production information may prove of interest to any person in the mill. Some of Mr. Kersey's methods and computations are unorthodox, and may invoke some lively discussion.

Slasher Production

Slasher production is usually determined from the r.p.m. of the front roll F R, Figure 9, as this roll drives the marker or measuring gears and squeeze rolls S R. Every revolution that the marker gear f makes the cut marker M puts a mark on the selvage of the warp, which is known as cut marks. The length of the cuts are governed by the change gear e. If the cuts are supposed to be 60 yards long after being woven into cloth they are usually made 5 to 7 per cent longer on the slasher to allow for contraction in length after the filling threads are added. Making a cut of cloth measure 60 yards, with 7 per cent contraction, the slasher cuts should be 107×60=64.2 yards. Assuming the front roll F R, 28¼ inches in circumference, the number of revolutions required of it to produce 64.2 yards=64.2×36÷28¼=81.8.

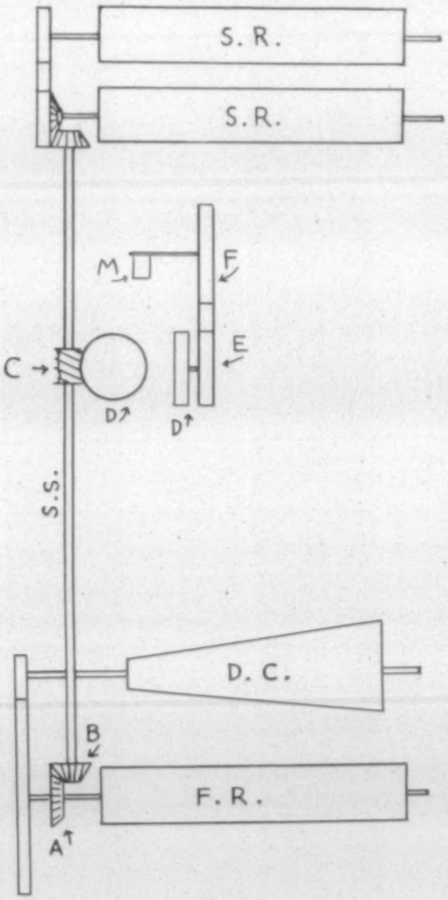


Fig. 9

To Determine Change Gear e

Considering f a drive gear 120 teeth, d a worm gear 60 teeth, b side shaft gear 22 teeth, c single worm and a front roll gear 44 teeth, the change gear e can be found by the formula

$$e=\frac{f\times d\times b}{81.8\times c\times a}=\frac{120\times 60\times 22}{81.8\times 1\times 44}=44$$

The formula shows that a 44 tooth change gear is required to make the marker M revolve one time while the front roll revolves 81.8 times and produces 64.2 yards.

If the beams require 12 cuts to fill them a full beam will contain 64.2×12=770.4 yards. Assuming the speed of the front roll 34 r.p.m., which is about right, the minutes required to fill a beam=

$$\frac{770.400}{.7847\times 34}=28.8$$

Allowing 3 minutes to doff, the beams per day of 8 hours=

$$\frac{60\times 8}{31.8}=15+$$

12×15=180 cuts.
180×64.2=11556 yards.

If the warp thread weighs 18 pounds per cut the pounds per day per slasher=180×18=3240.

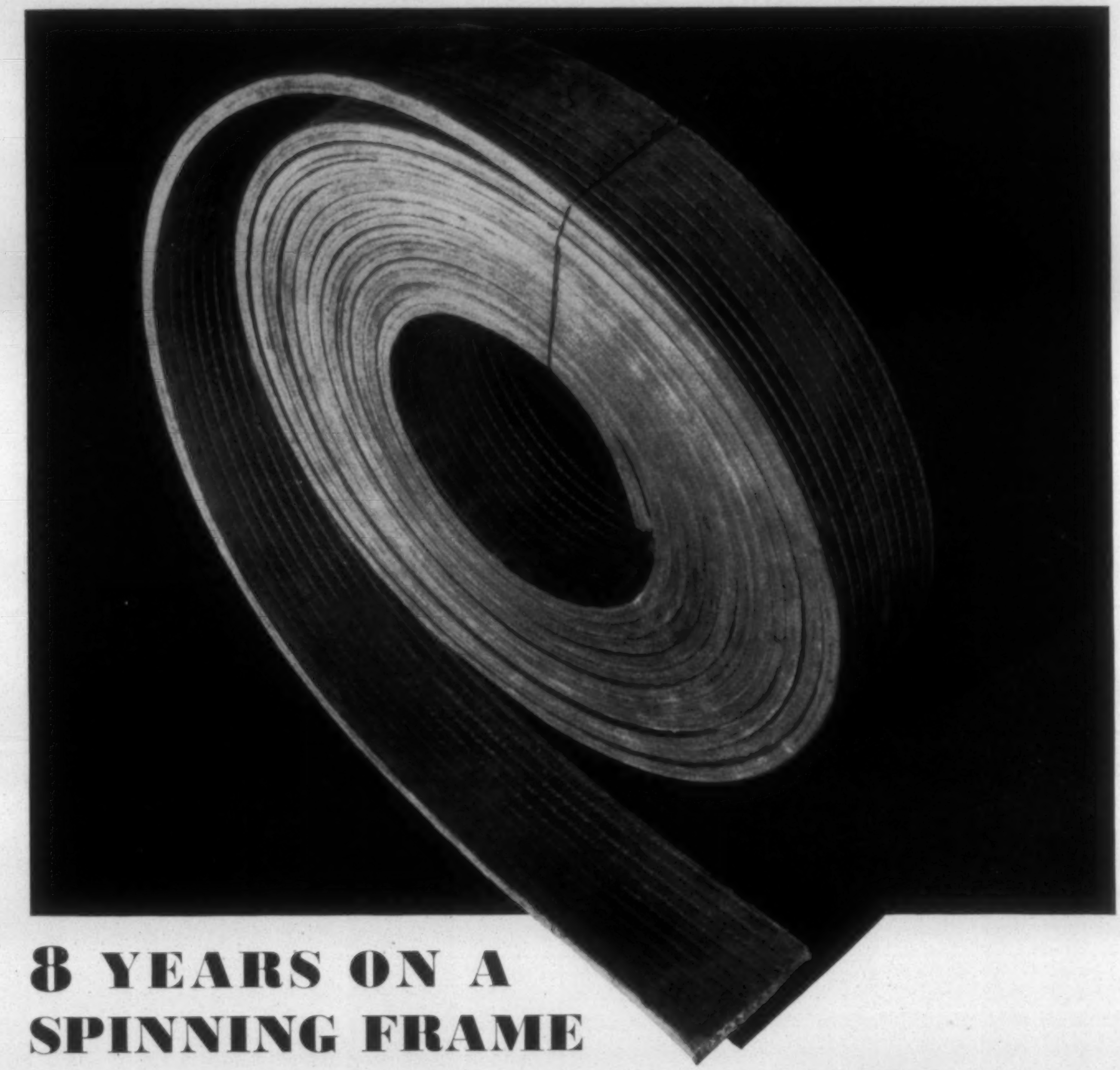
$$\frac{\text{The total ends in the warp}\times\text{length of cut}}{840\times\text{number of warp yarn}}=$$

pounds per cut.

Loom Production

The production of looms is usually reckoned in yards. The pounds produced is the yards divided by the yards per pound. Goods are sold with a certain or specified number of warp and filling threads per inch, a specified width of the finished goods and a specified weight or number of yards per pound. The speed or picks per minute is dependent or governed by the width and character of the goods. The speed for average widths is about 160.

(*Continued on Page 33*)



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HOUGHTON'S LEATHERS FOR THE TEXTILE INDUSTRY

Mill News

Enoree, S. C.—A warehouse blaze here recently did comparatively little damage, it is reported. Several hundred bales of cotton were in the warehouse at the time of the fire, but they were reported saved.

Hickory, N. C.—The Cherokee Mill and the Viewmont Knitting Mill, both of which have government contracts, are increasing their production facilities. Viewmont is installing ten additional machines, while Cherokee is installing 20 machines.

Burlington, N. C.—The King Cotton Mills have sold their plant in this city to the Celanese Corp., 180 Madison Ave., New York, and will liquidate. They will operate the plant long enough to complete unfilled orders. The plant has 10,092 spindles and has been operated on 14's to 30's yarns.

Kernersville, N. C.—The Adams-Millis Corp. hosiery plant here is to be enlarged. Head of the firm, J. E. Millis, of High Point, said complete details had not been worked out, but that the addition would be one story.

He said there would probably be no increase in employment and no increase in production. No new machinery will be added, certainly for the time being, he announced.

Southton, Tex.—The San Antonio Cotton Mills, which have been idle for sometime, have opened up with two full shifts. Among the many changes that have been made include the installation of eight new Saco-Lowell intermediates and one one-process picker. S. L. Deane, who was associated with this company before its closing, is now back as general superintendent.

Rome, Ga.—The Anchor Duck Mills, of this city, have announced plans for the construction of an addition which will measure 100 by 55 feet and will be two stories. The plans for the addition were prepared by Robert & Co., textile and industrial engineers of Atlanta, Ga.

Gastonia, N. C.—The Groves Thread Co. is constructing an addition to the picker room, making additional space for the opening of bales at Plant No. 2. In this department the company is installing two new cotton blending hoppers and one beater section. These machines are being added to the present breaker line of pickers.

Modernization of the machine shop is also underway with a brick building 16x20 feet being constructed as an addition to this department.

Bessemer City, N. C.—Fire of undetermined origin recently did considerable damage at the Osage Mill here, but as yet there has been no estimate of the amount of damage. The loss, however, was fully covered by insurance. The Bessemer City fire department responded and succeeded in extinguishing the blaze before the entire mill was destroyed.

The fire started in the card room and spread from there to the spinning department. Much belting was destroyed.

Fieldale, Va.—Construction has been started on a new $100,000 addition to the towel mill of Marshall Field & Co. at Fieldale. The contractor is the firm of John W. Smith & Son, of Leaksville, N. C.

The addition is to provide needed room for production space as a step toward "balancing" the textile firm's manufacturing facilities at Fieldale, which now employs more than 1,000 operatives.

J. H. Ripple, general manager of the mills, said that an office building and an addition to the picker room also will be built. The main addition will permit machinery rearrangement to provide a balanced production between the carding and spinning departments.

Pepperton, Ga.—A one-story extension to the Pepperton Cotton Mills got under way recently when the consulting and designing engineers, J. E. Sirrine & Co., of Greenville, S. C., released a contract for the construction amounting to approximately $17,000, to Henry B. McKoy Co., of Greenville, and another for the one-story freight elevator, which is part of the plan, to the Park Co., of Charlotte, N. C. The new building is to be 66 feet by 104 feet with brick walls, steel sash and frames, tar concrete and maple floors, wooden roof deck, 20-year tar and gravel roofing, brick elevator tower to house the new one-story freight elevator, and concrete platforms. Construction is to start at once. Pepperton Cotton Mills, established in 1897, are manufacturers of napkin, diaper and basket weave cloths, twills, piques, and employ about 350.

Stanley, N. C.—Preliminary sketch machinery plans for the old Katterman & Mitchell Mill, recently acquired by W. J. Carter, of Greensboro, N. C., and O. M. Gardner, of Washington, D. C., and Shelby, N. C., are about ready, according to J. E. Sirrine & Co., of Greenville, S. C., consulting and designing engineers, who were engaged to plan and supervise the construction of an additional large brick building as well as recondition the old one. The cost will be around $1,000,000. The mills will be operated as a carding and spinning plant for acetate rayon. For immediate use, the plans call for 15,000 spindles and the necessary auxiliary machinery, but the plant will be so laid out that its capacity can be raised to 50,000 spindles when needed. The mill's entire production of acetate rayon yarn will be used by the organization's four rayon weaving units. When completed, the plant will employ about 300.

MOORESVILLE, N. C.—The Burlington Mills Corp., with headquarters at Greensboro, N. C., has begun the construction of a one-story addition at its unit here. The cost of the construction work and equipment will be approximately $40,000. Barger Bros. have the contract.

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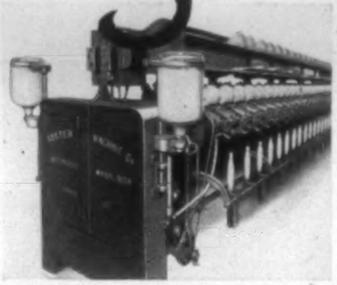

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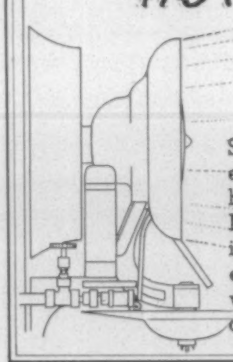

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Personal News

J. B. Green is now superintendent of W. B. Davis & Sons, Inc., Fort Payne, Ala.

G. W. Little is now superintendent of the Hartsville (S. C.) Print & Dye Works.

J. O'H. Finlay has succeeded A. H. Pattin as secretary of the American Finishing Co., Memphis, Tenn.

Richard Hutchison, secretary of the Dunson Mills, LaGrange, Ga., has also assumed the position of treasurer.

E. H. Bolen has succeeded T. M. Gardner as secretary of the Southern Brighton Mills, Shannon, Ga.

C. Y. Hall, Jr., has succeeded C. E. Doughtie as superintendent of the Georgia Mfg. Co., Columbus, Ga.

Bernard D. Shaw is now overseer of carding at the Beville unit of Avondale Mills, Alexander City, Ala.

E. P. Dewberry is now superintendent of the Arnall Mfg. Co., Elberton, Ga.

A. C. Dunson, superintendent of the Dunson Mills, LaGrange, Ga., is now also president of that company.

Thomas Cousins has succeeded Allen Little as general manager of the Dwight Mfg. Co., Alexander City, Ala.

P .A. Wynn is now superintendent of the Mandeville Mills, Carrollton, Ga.

Pryor Smith is now superintendent of the Branson Co., Langley, S. C.

J. A. Bryant is now superintendent of the Geneva (Ala.) Cotton Mills.

F. R. Smith is now superintendent of the J. C. Saunders Cotton Mill, Mobile, Ala.

J. J. Sims has succeeded W. E. Mays as secretary of the Glenwood Cotton Mills, Easley, S. C.

W. C. Williams is now superintendent of the Avondale Mills, Birmingham, Ala.

M. D. Weaver has succeeded John F. Yare as superintendent of the Winchester (Va.) Woolen Mills.

M. W. Henry has succeeded J. S. Chaya as superintendent of the Blackstone (Va.) Weaving Co.

S. L. Bolton is now superintendent of the Brazos Valley Cotton Mills, West, Tex.

R. L. Lapp is now superintendent of the Gaudelupe Valley Cotton Mills, Cuero, Tex.

William Beaumont has been elected secretary of the Bath Mills, Inc., Bath, S. C.

J. N. Edens is now president of the Corsicana (Tex.) Cotton Mills.

T. J. King has succeeded T. E. Tate as superintendent of the Franklin Fabrics, Inc., Elizazethton, Tenn.

G. P. Pruitt is now superintendent of the Dunean Mills, Greenville, S. C.

F. E. Darby is now superintendent of the weaving department of the Addison plant of The Kendall Co., Edgefield, S. C.

Harold R. Turner has been promoted from superintendent to assistant general manager of the Dunean Mills, Greenville, S. C.

T. D. Roche has succeeded R. E. McDonell as superintendent of the cotton mill of the Federal Prison Industries, Atlanta, Ga.

R. E. McCausland, field manager for the Barber-Colman Co., and an employee of the company for 36 years, has retired.

E. W. Yates has been promoted from superintendent to general manager of the Yates Bleaching Co., Flintstone, Ga.

Miss Annie Bell Towers has succeeded Mrs. N. T. Townsend as president of the H. C. Townsend Cotton Mill, Anderson, S. C.

A. H. Baugh, superintendent of the Saratoga-Victory Mills at Albertville, Ala., now also has charge of the mill of the same company at Guntersville, Ala.

John F. Schenck, Sr., president of the Cleveland Mill & Power Co., Lawndale, N. C., was married on May 19th to Mrs. Sara O'Brian Maness, of Hamlet, N. C.

P. B. Latimer, Jr., treasurer of the Dalla-Noval Yarn Mills, Dallas, Ga., is now also filling the position of superintendent.

W. D. Massey, formerly superintendent of the Peerless Cotton Mills, Thomaston, Ga., was on board the Zamzam, which was sunk recently in the Atlantic ocean. He was on his way to Capetown, South Africa, to install and superintend a cotton mill there for Consolidated Textile Mills, Ltd., of Liverpool, England.

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A. J. Mitchell, assistant treasurer of the Shamrock Damask Mills, Landrum, S. C., has succeeded H. I. Hodges as secretary of that company.

J. G. Chapman has been promoted from the position of superintendent to that of general superintendent of the Eagle & Phenix Mills, Columbus, Ga.

R. B. Cooke has resigned his position at the Mooresville (N. C.) Cotton Mills to become assistant superintendent of Plant No. 4, Erwin Cotton Mills Co., Durham, N. C.

Allie H. Holt, N. C. State College Textile School graduate of 1933, has accepted a position as assistant superintendent of the Scottdale Mills, Scottdale, Ga. He was formerly at Knoxville, Tenn.

H. G. Lynn, N. C. State College textile graduate, has been named assistant to T. E. Raht, vice-president and superintendent of the Swift Spinning Mills, Columbus, Ga.

Madison Cole, of Macon, Ga., senior in textile engineering at Georgia Tech, has been awarded a medal given each year by the Cotton Manufacturers' Association of Georgia to a textile graduate of outstanding ability.

J. Hal Daughdrill, general superintendent of Callaway Mills, LaGrange, Ga., was recently initiated as an honorary member of Phi Psi, honorary textile fraternity, at the Kappa Chapter, Auburn Textile School.

W. P. Hamrick has retired as active head of the Columbia, S. C., plants of Pacific Mills. He will continue in an advisory capacity, however. Mr. Hamrick has been conected with Pacific since 1900. He is president of the Columbia Chamber of Commerce.

Walter Hunken Made Southern Manager Of Sturtevant Co.

Walter L. Hunken has been made Southern manager of the B. F. Sturtevant Co., of Boston, Mass., it was announced recently. He will continue to have his headquarters at 708 Guilford Building, Greensboro, N. C., and will be in charge of both the Greensboro and Atlanta offices.

Mr. Hunken has been with the company for about 14 years, and his wide circle of friends in the industry will be gratified to learn of his promotion to this important position.

Simultaneously, it was announced that Dana C. Hathaway has been made manager of the Atlanta office, replacing H. J. Waggle, who has been called into the service as first lieutenant in the field artillery.

Ross Honor Graduate in Textile Engineering At Clemson

DeWitt Javan Ross, a senior in Clemson Textile School, was presented the Honor Medal presented by the National Association of Cotton Manufacturers to the student making the highest scholastic record in textile engineering. This medal was presented by Dean Willis at the Honor Day Exercises on May 9th. Mr. Ross has an exceptionally high record and has taken part in many student activities. His home is in West Columbia, S. C., and he has worked in the Columbia mills for the past three

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summers. He is the cadet colonel at Clemson. After graduation he will begin work with E. I. du Pont de Nemours Co.

S. T. A. Convention To Be Largest In Recent Years

The number of advance registrations for the Annual Convention of the Southern Textile Association, to be held at the Ocean Forest Hotel in Myrtle Beach, S. C., on June 12-13-14, indicates that it will be one of the best attended in recent years. The hotel already has more than 300 advance registrations.

The convention opens Thursday evening, June 12th, with the annual banquet of the Associate Members' Division, with mill men as their guests. This event is always good, and the floor show engaged for this year promises to be outstanding.

On Friday morning the speakers will be Governor Burnett R. Maybank, of South Carolina, and E. A. Terrell, president of the Terrell Machine Co., of Charlotte, N. C. Mr. Terrell will describe a training school for machinists which his company is conducting, and which should be of considerable interest to mill men.

Friday afternoon will be devoted to othe annual golf tournament, bridge tournament, setback, and other sports.

At the annual banquet Friday evening there will be a repeat performance of the event which was so popular last year, namely, the bingo game, with many prizes for the winners.

Malcolm E. Campbell, senior cotton technologist, U. S. Department of Agriculture, will be one of the speakers at the Saturday morning session. He will speak on some recently conducted tests on spinning, such as a comparison of irrigated and rain grown cotton, influence of artificial drying before ginning upon cotton spinning quality, a test of bales compressed to different densities, and others. The other Saturday morning speaker will be a member of the National Safety Council, whose name will be announced later.

Officers of the Southern Textile Association are: Frank D. Lockman, president; J. O. Thomas, vice-president; Robt. T. Stutts, chairman of the board; Marshall Dilling, executive secretary; and B. Ellis Royal, secretary-treasurer.

Ernest Eaddy is chairman of the Associate Members' Division, and Junius Smith is secretary.

Coming Textile Events

JUNE 7-8

Third Annual Textile Golf Tournament, Carolina Golf Club, Charlotte, N. C.

JUNE 12

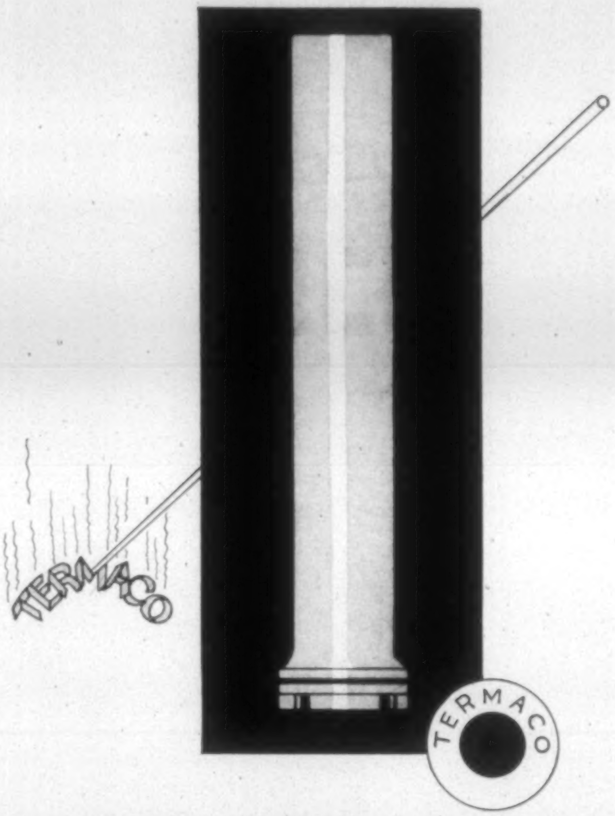
Associate Members' Division, Southern Textile Association, Annual Banquet, Ocean Forest Hotel, Myrtle Beach, S. C.

JUNE 13-14

Southern Textile Association, Annual Convention, Ocean Forest Hotel, Myrtle Beach, S. C.

JUNE 27-28

American Association of Textile Chemists and Colorists, Piedmont Section, Annual Outing, Ocean Forest Hotel, Myrtle Beach, S. C.



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Contributions on subjects pertaining to cotton, its manufacture and distribution, are requested. Contributed articles do not necessarily reflect the opinion of the publishers. Items pertaining to new mills, extensions, etc., are solicited.

As Seen at Washington

A group of about twenty Associated Business Paper Editors, including the editor of this journal, spent May 22nd and 23rd in Washington, D. C., for the purpose of obtaining inside information upon the progress of the defense program.

Interviews were held with President Roosevelt, Lord Halifax, William S. Knudsen, Sidney Hillman, Eugene Meyer, Edward R. Stettinius, A. W. Hawkes, president of the Chamber of Commerce of the United States, Representative Jere Cooper, Senator Truman and others. Due to a conflicting engagement we did not meet Leon Henderson whose price fixing department is now known as OPACS, but did take lunch with Ginsberg, Galbraith, Werner and Hamm of his department.

For a number of years the Associated Business Paper Editors have been holding sessions in Washington for conferences with officials, and because such officials know, from experience, that they will not be quoted, they talk frankly.

We came back, from the recent sessions, feeling that our defense program is progressing much better than is generally realized and that Great Britain, with our assistance, will eventually win.

We also came back with the feeling that a great task lies ahead of the people of the United States and that it requires the combined effort of business and labor.

The problem of the immediate future is to get the public to realize what this war means to the United States.

This is no time to worry about what is going to happen after the war is over. The important thing is to get going now.

It is man-hours which are going to determine the result and this is no time for strikes which are not absolutely justified. So much is being written about strikes that people do not realize the importance of accident prevention in war industries. During 1940 injuries cost twice as many man-hours as strikes.

The importance of the defense program is so great that American industries should play the game fairly and squarely with the Priorities Board. Those who obtain chemicals or other materials, under a plea of defense, when only a portion of their plant is on defense orders, are showing disloyalty and may find themselves cut off from all materials.

Many industries are going to find raw materials denied to them, as the result of such materials being needed for defense industries, and will be forced to close their plants. This will be hard but is a fortune of war. Tin, which is in small supply but necessary for defense materials, cannot be consumed by manufacturers of beer cans even though it means the closing of such industries and throwing many people out of work.

As weeks pass and the immense defense programs gets under way, people and manufacturers will begin to realize that the defense program is all-important and will be more willing to make the necessary sacrifices.

If Hitler wins, the United States, even though he never invades this country, will be placed in a straight jacket and for a generation, at least, will carry the expense of always being ready.

If Hitler is defeated not in another generation will there be any threat to our freedom.

Third Annual Golf Tournament

Qualifying rounds for the Third Annual Textile Golf Tournament began at the Carolina Golf Club, Charlotte, N. C., on May 30th and will extend through Friday, June 6th. Players may qualify at any time it suits them. All they have to do is register with Sut Alexander, the club manager and pay the tournament fee of $2.00.

Players will be divided into flights of eight and matches will be played Saturday morning and afternoon, June 7th, with finals on Sunday, June 8th.

Starting times will be published in the Charlotte Observer of June 7th or can be obtained after 9:30 P. M., Friday, June 6th by calling the Clark Publishing Co. (3-5586 Charlotte).

Putting a Ceiling on Prices

As price control has already touched combed yarns and now menaces many divisions of the cotton textile industry, it is well to examine the records of prices which have prevailed.

The prices are taken from the New York Journal of Commerce.

Date	Middling Upland Spot at New York	30s Southern Single Carded Warps	60s Single Combed Peeler	Printcloth: 38-½", 64x60, 30s, 40s 5.35 yds. per lb. (BYT=25,541) (S=33.8; A'—30)	
	Cents Per Pound	Cents Per Pound	Cents Per Pound	Cents Per Yard	Pound
1929					
Jan. 2	20.10	41	62	7.625	40.79
April 1	20.75	39.5	69	7.625	40.79
July 1	18.20	39	66.5	7.25	38.79
Oct. 1	19.15	39.5	63.5	7.75	41.46
1930					
Jan. 2	17.45	38.5	64.5	7.	37.45
April 1	16.65	36	63	6.25	33.44
July 1	13.65	31	60	5.375	28.76
Oct. 1	10.50	27	55	5.5	29.42
1931					
Jan. 2	10.15	25.5	51	5.25	28.09
April 1	10.55	25	49	5.5	29.42
July 1	10.15	24	46	5.125	27.42
Oct. 1	5.80	20	41	3.75	20.06
1932					
Jan. 4	6.25	19	38	3.375	18.06
April 1	6.30	18.5	37	3.75	20.06
July 1	5.55	16	32	3.062	16.38
Oct. 1	7.25	20.5	45	4.	21.40
1933					
Jan. 3	6.10	17.5	36.5	3.375	18.06
April 1	6.40	17.5	33.5	3.125	16.72
July 1	10.30	29.5	50	6.25	33.44
Aug. 1	10.40	*39.25	*60.5	7.5	*40.12
Oct. 2	9.90	*38.5	*64	6.75	*36.11
1934					
Jan. 2	10.50	*35	*62	6.625	*35.44
April 2	12.15	*36	*62	6.875	*36.78
July 2	12.10	*34.5	*54	6.5	*34.77
Oct. 1	12.50	*35	*55	7	*37.45
1935					
Jan. 2	12.85	*34.5	*56	6.75	*36.11
April 1	11.30	*33.5	*55	6	*32.10
July 1	12.15	*34	*55	6	*32.10
Oct. 1	11.05	*34	*55	6.25	*33.44
1936					
Jan. 2	12.20	*36	*56	6.375	*34.11
April 1	11.56	30.5	51	5.375	28.76
July 1	12.50	29.5	49	5.5	29.42
Oct. 1	12.64	33	55	6.25	33.44
1937					
Jan. 4	12.91	36	60	7.125	38.12
April 1	15.17	38	64	7.625	40.79
July 1	12.62	33.5	60	6.25	33.44
Oct. 1	8.55	28	53	5	26.75
1938					
Jan. 3	8.38	24.5	45	4.625	24.74
April 1	8.63	25	44	4.5	24.07
July 1	9.01	25	45	4.625	24.74
Oct. 3	8.30	24.5	44	4.375	23.41
1939					
Jan. 2	8.94	25	45	4.375	23.41
April 3	8.87	25	45	4.25	22.74
July 1	9.75	26.5	44	4.625	24.74
Oct. 2	9.33	32	50	5.5	29.42
1940					
Jan. 2	11.54	32	55.5	5.5	29.42
Feb. 1	10.89	29	53	5.25	28.09
March 1	11.07	28	49	4.875	26.08
April 1	10.74	27.5	48.5	4.875	26.08
May 1	10.96	27.5	55	5.00	26.75
June 1	10.21	25.5	50	4.50	24.07
July 1	10.69	27	50	4.75	25.41
Aug. 1	10.17	27.25	50	4.75	25.41
Sept. 3	9.49	27.5	50	4.875	26.08
Oct. 1	9.69	28	52	5.125	27.42
Nov. 1	9.57	29	53	5.25	28.09
Dec. 2	10.06	31.5	57	5.375	28.76
1941					
Jan. 2	10.62	31.5	57	5.375	28.76
Feb. 1	10.90	31.5	58	5.625	30.09
March 1	10.90	31.5	62.5	5.875	31.43
April 1	11.48	33.5	67	7.125	38.12
May 1	11.73	38.5	73	7.125	38.12

*Included processing tax of 4.2 cents per pound of lint cotton.

The above table shows that 30's carded warps sold as low as 16 cents and that print cloths went as low as 16.38 cents per pound. 60's combed yarns went to 33½ cents

All these low prices were much below the cost of production and the records shows that for long periods prices were at cost of production or below.

Those who now claim that, as friends of the industry they do not wish to see prices go too high, were strangely silent during the periods when prices were below cost of production and when print cloth mills attempted to save themselves by regulating production they were indicted by the Government.

At the moment 30's combed yarns are under the most severe attack, and while we do not have, at this time, the record of such yarns since 1929, we do have prices beginning in 1937.

30's COMBED YARNS

(Prices first week of each month)

	1937	1938	1939	1940	1941
January	42	29	30	36	37
February	43	30	30	36	37½
March	43½	31	30	34	40
April	47	29½	30½	32	45
May	45	29	30	32	51
June	41½	29½	30½	31	—
July	40	30½	31	32	—
August	37½	29½	31	32	—
September	34½	29½	31	32	—
October	33	29	35	34	—
November	30	31	36	35	—
December	29½	30	36	37	—

The unusual demand for 30's combed yarn can be attributed to a large extent to the army and navy requiring many goods to be produced with combed yarns. They have gone so far as to require combed yarns for mosquito netting.

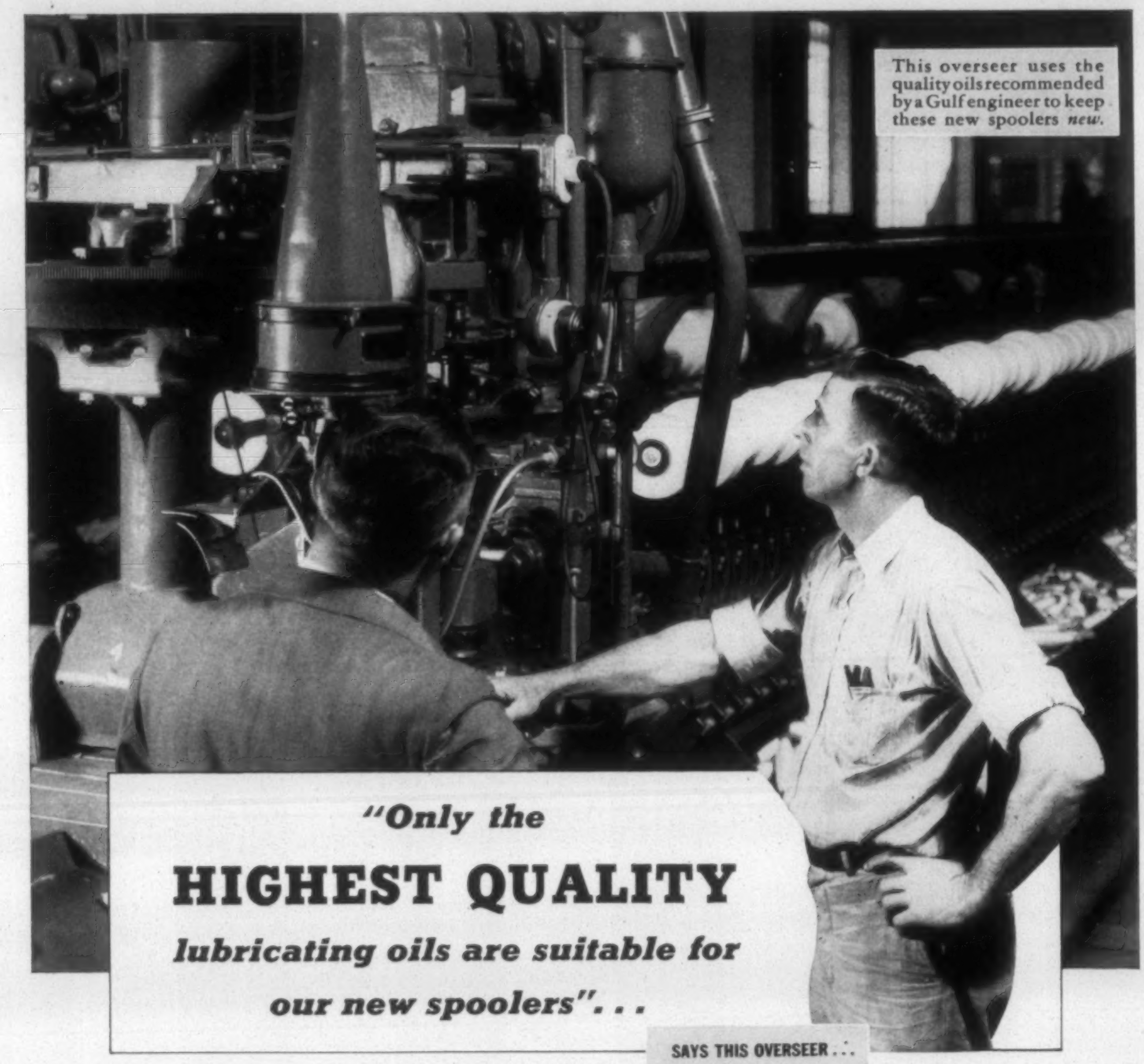
During many of the months covered by the above table combed yarns were either below or very close to the cost of production.

One of the few profitable periods was in the early months of 1937 when 30's combed brought 47 cents with a minimum wage scale about 25 cents per hour.

Knowing that the minimum wage of 37½ will soon go into effect, most mills have adopted that scale and 51 cents now is not much better than 47 cents in April, 1947.

We realize, of course, that there must be some top to prices, if inflation is to be avoided, but industries which have had many lean years should be allowed to have some prosperity.

A ceiling of 42 cents for 30's combed yarns is too low, based upon the 37½-cent wage and other increased costs.



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lubricating oils are suitable for our new spoolers". . .

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MASTER MECHANICS' SECTION

Handling the Steam Giant

By Ernest W. Fair

ONE of the most powerful forces over which the cotton mill management must have control is the steam used not only for power purposes but for heat and other uses. It is a giant over which control is a delicate matter.

Carelessness in a single factor either in the production or handling of steam will mean little profits leaking out of the company treasury every day of the week and every week of the year. We generally pay a great attention to every other factor in the plant but we seldom give careful attention to the problem of saving profits in steam handling.

The pointers and suggestions in the paragraphs to follow are the result of extensive research in a number of plants during the last six monoths. Ideas discovered in those plants have been compiled and condensed into these paragraphs so that steam handling may become easier and more profitable for every cotton plant that employs the giant in its operation.

Avoidance of moisture in steam is of the utmost importance. The presence of moisture in steam causes a loss, not only in the practical waste of the heat utilized to raise this moisture from the temperature of the feed water to the temperature of the steam, but also through the increased initial condensation in an engine cylinder and through friction and other actions in other steam equipment. The presence of such moisture also interferes with proper cylinder lubrication, causes a knocking in the engine and a water hammer in the steam pipes.

It is always a good idea to thoroughly insulate the throttling calorimeter and sampling nozzle which measures the moisture content of the steam as well as all pipes and fittings leading to it, as this will decrease radiation losses. Care must be taken to prevent the orifice from becoming choked with dirt and to see that no leak occurs. The exhaust pipe should always be short in order to prevent back pressure below the disk.

The calorimeter should be located as near as possible to the point from which the steam is taken and the sampling nozzle should be placed in a section of the main pipe line near the boiler and where there is no chance of moisture pocketing in the pipe. It is always best to locate a sampling nozzle in a vertical main rising from the boiler with its closed end extending nearly across the pipe.

Where non-return valves are used or where there are horizontal connections leading from the boiler to a vertical outlet; water may collect at the lower end of the uptake pipe and be blown upward in a spray which will not be carried away by the steam owing to a lack of velocity.

Before taking any calorimeter reading, steam should be allowed to flow through the instrument freely until it is thoroughly heated.

We should never lose sight of the fact that the first step in profitable generation of steam is in burning the fuel to the best advantage. If possible we must oxidize our fuel at as slow a rate as possible though we can likewise do it at as high a rate as physically possible to do so if the proper controls are present.

Heat loss from radiation is another profit leak. This is generally in proportion to the amount of surface, its nature, its temperature, and the time it is exposed. This loss can be almost entirely eliminated by thick walls and a smooth white or polished surface, but its amount is ordinarily so small we are tempted to overlook these precautions. They are, however, just one more profit leak, all of which, when put together, amount to a handsome sum.

The most economical way to burn coal is rapidly and at high temperature but only on condition that the boiler and all of its accessory equipment are in perfect shape. Otherwise the advantage turns to a disadvantage.

Economics in steam generation can also be obtained in many plants by the use of feed water heaters which bring about a decided saving in fuel cost. The time required for the conversion of the water into steam is diminished, and the steam capacity of the boiler correspondingly increased. Further, the feeding of cold water into a boiler has a tendency toward setting up temperature strains, which are diminished as the temperature of the feed approaches that due to the steam pressure. An important additional advantage of feed water heating in certain classes of apparatus is the precipitation in the heater of a large portion of the scale forming ingredients before they enter the boiler, with a consequent saving in cleaning and losses through decreased efficiency and capacity.

Naturally economical steam generation cannot be obtained unless the right boiler has been selected in the first place. Here are a number of suggestions pertaining to boiler selection that may well be remembered when the time for plant improvement arrives.

The criterion by which the efficiency of a boiler plant is to be judged is the cost of the production of a definite amount of steam. Simplicity of operation, flexibility and reliability must be present also. Items of repair and upkeep cost may often be high because of the nature of the service.

All of these factors as they affect the individual plant and one thing more must be considered . . . the builder's guarantee. That guarantee must be specific, clear and of such a nature that it carries definite responsibilities. Too many boiler guarantees are mere fancy words on an equally fancy piece of paper.

These are all small details but each is important in itself as far as controlling the steam giant is concerned.

Carder Presented Textile Colorist Award

Wade H. Carder, a senior in textile chemistry at Clemson Textile School, has been given the 1941 *Textile Colorist* award for outstanding work in textile chemistry and dyeing. This award is given each year and is based on scholastic record. Mr. Carder is an honor graduate and is a captain in the Cadet Corps. He has accepted a position with the American Viscose Corp.

Western Carolina Safety Council To Meet At Clemson

The Western Carolina Safety Council will meet at Clemson College on Friday, June 13th. The meeting will be held in the College Chapel about 7 P. M. T. H. Turner, secretary, is planning a very interesting program. All those interested in safety in textiles are invited. About seven hundred people attended the last Safety Conference hld at Clemson.

OBITUARY

GEORGE P. RAY

George P. Ray, former vice-president and general sales manager of the Riverside & Dan River Cotton Mills, died recently in New York.

Thirty-seven years ago Mr. Ray joined the Riverside & Dan River Cotton Mills, coming from the Cone Export & Commission Co. He began as a general salesman, advancing to the position he finally occupied at the time of his retirement. During his administration he developed into a commanding position as a leader in the cotton textile industry.

He had been a director of the Cotton-Textile Institute, and also a director of the Association of Cotton Textile

Pictured above are members of the 1941 graduating class at the Textile School of North Carolina State College, Raleigh, N. C. Reading from left to right they are as follows:

First Row—G. F. Watson, Salisbury; T. J. Fowler, Greensboro; R. E. Brannon, Rockingham; J. E. Odegaard, Montclair, N. J.; A. D. Allison, Pine Bluff; June Dickson, Raleigh; E. F. Glenn, Greensboro; E. C. Eaton, Yadkinville; R. S. Hines, Greensboro; H. S. Messersmith, Jr., Montclair, N. J.; A. H. Pierce, Montreal, Canada.

Second Row—M. N. Carpenter, Jr., Margarettesville; E. W. McLeod, Carthage; T. A. Johnson, Jr., Liberty; J. T. Shotwell, Henderson; J. G. Soroka, Lachine, Quebec, Canada; L. C. Drye, Landis; J. D. Boger, Concord; D. H. Hill, Charlotte; W. S. Pearson, Charlotte; R. S. Handly, Upper Darby, Pa.; Sidney Tager, Brooklyn, N. Y.; Y. C. Ding, China.

Third Row—D. W. Edwards, Fort Mill, S. C.; C. F. Gregory, Richmond, Va.; D. J. Brown, Cramerton; J. R. Scoggins, Cramerton; T. B. Price, West Jefferson; W. G. Holadia, Roanoke Rapids; O. V. Byerly, Lexington; G. W. Creech, Concord; Irwin Bloch, New York City; D. L. Turner, Greensboro.

Fourth Row—D. P. Gambill, Independence, Va.; H. V. Edwards, Fort Mill, S. C.; W. A. Thomason, Charlotte; B. Z. Routh, Jr., Greensboro; E. P. Moore, Bynum; T. R. Brown, Cramerton; B. L. Little, Mooresville; R. S. Densberger, Kenmore, N. Y.; W. C. Friday, Dallas; F. M. Clements, Greensboro; P. D. Kaley, Scranton, Pa.

Several members of the class were not present when this picture was made.

Dr. Thomas Nelson, Dean of the Textile School, says that the requests for graduates of the Textile School have been heavier than ever before and the number of men in the graduating class is not sufficient to fill these requests.

Merchants of New York. During the World War, Mr. Ray served on various government committees.

Within the period he was with Riverside the mills grew in size and importance to the present outstanding place they occupy in manufacturing and distribution.

Within the same long interval of time Mr. Ray gathered a very large number of friends. His career was marked by numerous close associations with many of the leading merchants and manufacturers of the country.

T. S. BAGWELL

T. S. Bagwell, 70, retired master mechanic of the Clifton Mills, Clifton, S. C., died recently at his residence following an illness of one week.

Mr. Bagwell was well and favorably known as one of the better master mechanics of the South.

He had made his home at Clifton for the past 35 years, and was an active member of the St. Andrews Methodist Church of that community.

ALBERT LEHMANN

Albert Lehmann, 55, superintendent of the Dixie Cotton Mill in LaGrange, Ga., died suddenly at his home recently.

He had been associated with the West Point Mfg. Co. for the past 33 years, having served with the Shawmut Mill, the Rome Anchor Mills, and since 1925 had been superintendent of the Dixie Mill.

He was born in LaGrange, October 8, 1886, the son of Mrs. Irene Lehmann and the late Albert Lehmann. He was educated in the LaGrange schools, entering the textile business with the West Point Mfg. Co. upon his graduation from high school. He had been with the firm since.

ERNEST JOSEPH LEFORT

Ernest J. Lefort, 67, of Greensboro, N. C., technical representative of Ciba Co., Inc., died May 9th, following a brief illness. Mr. Lefort, who had been connected with Ciba Co., Inc., since 1924, was widely and popularly known throughout the textile industries of the United States and Canada, and was held universally in high esteem for his character, integrity, and technical skill. He was born in Montreal, Canada, on November 15, 1874, and began his textile career in 1895 with Otis Bros. Co., Ware, Mass. In 1906, he became superintendent of dyeing at White Oak Cotton Mills, Greensboro, N. C., and joined Ciba 18 years later. He is survived by Mrs. Lefort and six children: Leo Lefort, Wichendon Springs, Mass.; Adrian Lefort, Pennsbrove, N. J.; Lieut. C. R. Lefort, U. S. A., State College, Raleigh, N. C.; Mrs. W. M. Gant, of New York City; Mrs. Harold P. Faust, of Columbus, Ga., and Miss Marguerite Lefort, of Greensboro, N. C.; and one sister, Mrs. Roch Dusseault, of Ware, Mass.

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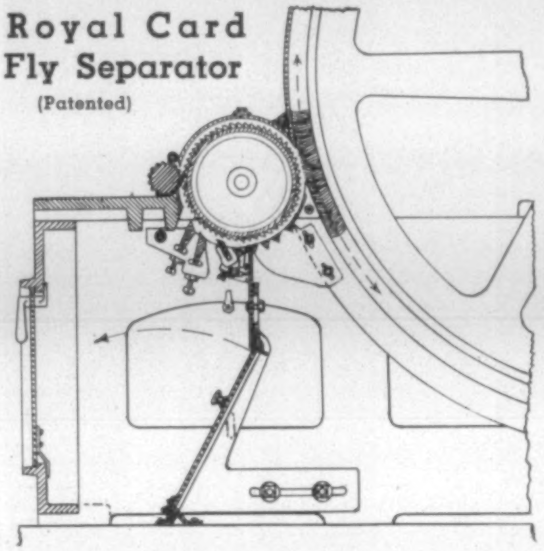

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Rayon Throwing

(*Continued from Page 14*)

soaking solution and its influence on the crepe effect. It is a widely recognized fact that an increase in gelatin percentage will have a decided tendency to reduce the pebble size, while an increase in oil percentage will lengthen it. There are, however, other factors involved. For instance, owing to differences in chemical structure, all rayon makes do not absorb the bath ingredients in the same proportion. It becomes, therefore, of prime importance to design the soaking formula according to the characteristics of the particular rayon used and the type of pebble sought.

Application of the crepe treatment is mostly carried on in soaking tubs or with specially designed machines. While it is possible to size the yarn in the single end, this method is little used, owing to the complications it entails and its cost.

When the treatment is given in a tub, skeins are grouped into bundles; sometimes wrapped in cheese cloth, sometimes inserted into net bags. Bundles are placed on top of the sizing liquor and are allowed to sink of their own weight. In doing so, the air is given a chance to escape freely from the inside of the bundles, thereby preventing formation of air pockets as might occur were the bundles forced down. A desirable temperature for the soaking bath at the time the yarn is entered is anywhere from 130 to 140° F. From the time the last bundle is totally submerged, 30 minutes are generally allowed for adequate penetration. The bundles are then removed from the bath and are permitted to drain to rid the bundles of the excess liquor, prior to being taken to the extractor.

A large group of throwsters prefer machine processing, for it produces a more evenly tinted yarn than tub soaking. This matter of even tinting is rather important for plants handling a large number of descriptions as it helps to preclude mixtures. Moreover, it is logical to assume that any procedure producing more even tinting is also apt to distribute the size more uniformly.

Proper Extraction Important

Following soaking, the yarn is placed in an extractor for the purpose of removing the excess liquor. It has become a common practice to whizz until the yarn retains its equivalent weight of solution. The importance of uniform extraction within each batch and among several batches likely to be merged later cannot be overly stressed. One must guard from overloading the extractor, having bundles so close to the center of the basket, that the degree of extraction they receive is by no means comparable to that of bundles located farther away. Duration of extraction varies according to the efficiency of the extractor—4 min. is probably a fair average.

The next step is to dry the skeins. To that effect, operators place the skeins on smooth rods, shaking each skein gently to straighten out whatever tangling-up might have taken place. Also, to bring about a fair parallelism among the skein laps, thereby minimizing the chances for hard spots, stickers and insuring better winding qualities.

It is recommended not to exceed 160°-170° F. during the drying operation. Duration of exposure is to be so regulated as to prevent lack of drying as well as over-drying. It is well known that in the event dehydration is carried on to the point where less than 5% of moisture is left in the yarn, the dyeing levelness of rayon is affected adversely.

Following the drying, it is desirable to allow the skeins a cooling and conditioning period by merely exposing them to room temperature. Such a rest period provides an opportunity for the skeins to readjust themselves and to become more uniform as to moisture content.

I wish to emphasize the importance of this conditioning period, for this is the last stage during which the yarn is free. After that, it will be handled in packages offering no possibilities for further yarn readjustment.

Rayon is then wound on winder bobbins according to the direction of twist the yarn is to receive. The point of winding tension deserves careful attention. Too much tension will injure the yarn, too light a tension will result in soft bobbins, and soft bobbins do not run well in spinning. To prevent stretching the yarn at winding time, it is well to limit the tension to a maximum of ¼ of a gram per denier and to operate at 55° relative humidity or slightly lower. A fairly solid bobbin, level built and free of ridges is necessary for efficient spinning.

Getting Proper Twist

Now we come to the spinning, operation to be carried out on up-spinners. During this process, the yarn is to receive whatever turns are necessary to raise the yarn original twist to the total turns wanted. This, of course, provided the original twist is in the same direction as the final twist. Some of the important spinning elements are spindle speed, selection of proper flyer, tension, and proper build-of take-up shaft bobbin. For 100 denier, spindle speeds ranging from 10 to 11,000 R.P.M. are commonly practiced. While higher speeds are possible, they demand well balanced bobbins and spindles in excellent condition.

Several kinds of flyers are available. It is probable that the type most in vogue comprises a fiber eccentric, bearing a brass or aluminum hub, to which the flyer arms are attached. For 100 denier, a double arm flyer, mounted with No. 8 wire, is the desirable type to use to obtain a tension within the limit of ¼ grams per denier.

Defects in Spinning

Serious defects may develop in the course of spinning; namely, slack twist due to slipping spindles—high twist traceable to slipping take-up shaft bobbins—broken filaments, cut and weak yarn often caused by rough flyer wires—fly waste—burnt yarn, generally caused by undue friction of the cork rolls onto the yarn—and last but not least, soiled or dirty yarn. This last defect is one of the most difficult to combat and is a source of many headaches for manufacturers throwing rayon crepes destined for fabrics dyed in white or pastel shades.

Control of the soiling problem requires everlasting attention on the part of the throwster. Rayon has a considerable affinity for dirt and grease and is most unwilling to release it. Once a twisted rayon yarn is soiled, it is extremely difficult to scour it clean and it would appear that for the moment, the only solution known for this problem lies in the throwster producing a clean yarn. A great deal of the soiling seems to be picked from the air, from dirt accumulating on the flyer arms while in motion and on the yarn itself during any shutdown period. Adequate air cleaning is likely to be one of the most helpful steps to take to curb soiling.

Following the spinning, rayon crepes are steamed. The function of the steaming is one of setting the yarn rendering it limp and flexible to the point where it possesses no more tendency to kink. There are numerous types of steamers or conditioners on the market. Modern steamers are equipped with wet and dry bulb control, also timing devices, in fact, are nearly 100% automatic. A combination of 175° for the dry bulb and 165° for the wet bulb is quite adequate to set 100 denier rayon crepe 52 turns. The duration of the steaming time is to vary according to the efficiency of the equipment at hand.

Whenever the crepe is to be redrawn, care must be taken to allow the steamed rayon crepe a period of conditioning prior to the redrawing. Furthermore, the redrawing tension must be kept within the tension limits cited before.

In my opinion, throwsters equipped with suitable yarn throwing machinery may reasonably expect to meet the perfection standards as set by the trade, provided, particular attention is given to the most essential points heretofore mentioned, namely:

1. Control of the tension within the acceptable limit in all operations. Whenever the tensions applied extend beyond the safe range, the yarn is strained, is made to elongate; in other words, a physical distortion takes place. A peculiarity of strained rayon is that it possesses the faculty of creeping back to its original length under conditions as occur during the dyeing.

   During the dyeing and finishing strained ends will endeavor to go back to their original length, if not allowed to do so owing to the cloth texture, they become tight and produce the defect known as shiner or tight ends.

   Were it possible to strain all ends uniformly the danger of getting merchandise affected by shiners would be lessened. Unfortunately tension control as found on present textile machines have not been refined to the point where this is possible so that the best prevention against shiners is to operate with tensions leaving the yarn unimpaired.

2. Judicious selection of soaking ingredients—carefully planned soaking solution and proper application of such a solution.

   With reference to judicious selection of ingredients, I might say that they should be chemically neutral, stable, uniform and soluble in a commercial scouring bath.

   The importance of uniform application is obvious for unevenly applied sizing ingredients will influence the time required for their removal, thereby affecting the action of the crepe.

3. Drying of the sized yarn at temperature not higher than 170° F. avoiding over-drying as well as lack of drying. As mentioned before, excessive dehydration affects the dyeing levelness. Overly dried rayon generally dyes light because such yarn resists the dye penetration. Insufficiently dried rayon is also dangerous inasmuch as high moisture content reduces materially the tensile strength of the yarn and renders it more subject to strain under operating tensions.

4. Use of steamers having wet and dry bulb control, also timing devices.

5. Processing of the yarn in the neighborhood of 55 RH in winding, spinning, and redrawing.

Before closing, may I say just a few words about the late trend of the rayon throwing industry. In response to a demand for lower costs and large knotless packages, rayon doublers and spinners have been designed to handle packages a great deal larger than ever before. A few years ago, an 8 oz. bobbin was considered large, today, modern spinners and doublers accept up to 24 oz. packages. Large package machinery is gaining considerable favor with the industry and from all appearances the problems it presented have been largely solved.

Paper presented at Rayon Symposium, N. C. State College, May 5th-9th.

Cotton Mill Production Formulae

(*Continued from Page 18*)

The greater the picks per inch the less amount of yards can be woven per hour or day. The weavers are paid by the cut. A cut is a roll or bolt containing a certain number of yards, which is usually 58 to 62.

$$\frac{\text{The picks per minute}\times 60\times\text{hours per day}=}{\text{Picks per inch}\times 36}$$

yards per day. This is 100 per cent or the theoretical production if the loom runs continuously. The usual percentage obtained is 80 to 95. At the end of the week the total cuts are counted and the yards that are taken off the looms is the week's production.

As the cloth is composed of warp yarn, filling yarn and sizing (starch and compounds), a cut of cloth contains a certain per cent each of warp filling and sizing material.

Assuming a piece of goods to be of the following construction, 72×42×28" 2.20

The warp threads per inch width=72
The picks or filling threads per inch=42
The width 28 inches and the yards per pound=2.20
The weight of one yard=7000 3181 grains or .454 lbs.

2.2

If the cuts are 60 yards in length the weight of one cut= .454×60=27.2 pounds.

Assuming the warp 67 per cent, the size 8 per cent, and the filling 25 per cent, which is the proportion of a very good piece of blue denim. A cut of cloth will be composed of

Warp .454×67×60=18.24 lbs.
Size .454×08×60= 2.18
Filling .454×25×60= 6.81

27.23

The same answer can be arrived at the following way:

27.2×67=18.22
27.2×08= 2.18
27.2×25= 6.80

27.20

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Mechanic with some electrical and steam experience for Textile Plant in Eastern North Carolina. State qualifications in writing, also salary expected.

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c/o Textile Bulletin.

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Charlotte, N. C.
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Washington, D. C.
Paul B. Eaton
Former Member Examining Corps
U. S. Patent Office

WANTED

Position as superintendent or carder or spinner. 18 years on last job. Satisfactory references.

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c/o Textile Bulletin

WANTED—Position as master mechanic; 15 years' experience as same. Thoroughly familiar with steam or electric drive; machine shop work, repairing, upkeep, installation of mill machinery and power plant equipment. Address "M. M.," c/o Textile Bulletin.

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POSITION WANTED as overseer weaving, overseer clothroom, or designing. 29 years old; free of draft; wide practical experience in designing and weaving along with a technical training. I. C. S. student. Address "Overseer," c/o Textile Bulletin.

Cotton Crop Estimate For 1940 Reduced To 12,564,640 Bales

The Agriculture Department has issued revised estimates of the 1940 cotton crop, placing production at 12,564,640 bales of 500 pounds gross weight, compared with its estimate of 12,686,000 bales made last December and 11,817,000 bales produced in 1939.

The area in cultivation to cotton on July 1st last was 24,871,000 acres, compared with 24,683,000 on that date for the 1939 crop. The area picked was 23,861,000 acres, compared with 23,805,000 for the 1939 crop.

The yield of lint cotton picked was 252.5 pounds to the acre, compared with 237.9 pounds in 1939.

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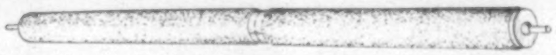
New Type Scavenger Roll for Spinning Frames

A new type of spinning scavenger roll, covered by patent number 2,234,779, has been invented and is being manufactured by E. F. Rose & Co., of Maiden, N. C.

The principal feature of this new roll is its ease of stripping. This is accomplished by the use of a plush covering, put on in two pieces so that the pile of the fabric lays toward each end from the center. The center joint is covered with a smooth plastic material, which falls between delivery rolls.

In stripping this new scavenger roll, the spinner grasps the roll in the center, at the plastic seam, and strips toward each end. The pile of the plush, inclined toward the end, collapses under the pressure and all the fibers adhering thereto easily slip off the end of the roll. This eliminates the customary twisting and tugging (or cutting off with a knife) that frequently occurs with the conventional type roll.



Another feature of the new roll is the tapering of the flanges that limit the distance the trunnions are driven to the ends of the roll. This is said to minimize the danger of the trunnions becoming jammed in their bearings.

It is also claimed that this covering keeps flutes clean, picks up better, and greatly improves the appearance of a spinning room.

Samples of the roll have been in constant mill use for 28 months now and are said to show very little signs of wear. They are being recommended as equipment on new spinning by Saco-Lowell Shops.

American Viscose Corp.

A nation-wide underwriting group of 152 investment firms, headed by Morgan Stanley & Co., Inc., and Dillon, Read & Co., offered to the public on May 26th, 228,480 shares of 5 per cent cumulative preferred stock and 1,568,000 shares of common stock of American Viscose Corp. About 500 additional investment dealers will participate in the distribution of the securities. The preferred stock is priced at $107.50 per share, plus accrued dividend from May 1st, and the common stock at $24 per share.

On May 21st a dividend of $1.25 per share was declared on the preferred stock and a dividend of 50 cents per share on the common stock, both payable August 1st to stockholders of record July 15th. At that time the directors announced that they expected to follow the policy of paying dividends which are a reasonable proportion of the company's earnings consistent with maintaining a strong working capital position.

With this offering American investors will acquire ownership of the largest producer of rayon in the United States. The corporation was formerly an American subsidiary of Courtaulds, Ltd., a British company. In March a group of 17 investment banking firms purchased from the British Treasury about 91 per cent of the stock of the corporation.

As a result of recapitalization subsequent to the purchase from the British Treasury, the new capital structure of the corporation consists of 251,940 authorized shares of 5 per cent cumulative preferred stock, of which 250,693 shares are outstanding, and 2,000,000 authorized shares of common stock, of which 1,720,442 shares are outstanding. The corporation has no funded debt. Approximately 5 per cent of the new preferred and common stock has been retained by Courtaulds, Ltd., and approximately 4 per cent by other holders of the old stock.

Arnold, Hoffman & Co. Purchases Dextrine Plant of Corn Products Refining Co.

Arnold, Hoffman & Co., manufacturing chemists, with main office in Providence, R. I., have recently acquired the dextrine plant of Corn Products Refining Co., at Edgewater, N. J. The equipment has already been moved to Dighton, Mass., where Arnold, Hoffman & Co. have practically completed setting up the most modern dextrine manufacturing facilities in the East.

This expansion will materially increase Arnold, Hoffman's output of gums and dextrines, in which they have specialized for many years, and in addition will enable them to broaden their line to include cold water soluble dry adhesives for paper products, ply woods, and other wood products.

New Southern Office for Watson-Williams

Watson-Williams Mfg. Co. has opened a Southern office at Greenville, S. C., Room 810 Woodside Building, in charge of the company's Southern representative, E. V. Wilson. The telephone number is Greenville 105. It is hoped that through the facilities of this office mills in the South will receive the most prompt attention on all problems which relate to shuttles and heddle frames.

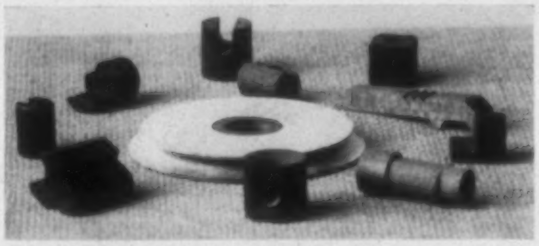
Some Suggested Improvements in Efficiency Engineering in the Textile Industry

(*Continued from Page 13*)

can be solved by the usual methods.

A few years ago an article written by the superintendent of a Southern mill appeared in a prominent textile magazine. It reads somewhat as follows: That it was agreed, one minute was ample time to allow for fixing broken ends and starting up a loom and therefore a weaver could in an eight-hour day repair four hundred and eighty breaks. If there were an average of eight breaks per loom per day, it was plain that a weaver could run sixty looms. While this sounds like correct figuring, the question of whether it is or not, depends entirely on what is meant by running a loom. If you do not care what production you get per loom, then a weaver can be given any number of looms. But if you want the highest possible production at the lowest total cost then you must take into consideration the things that prevent a weaver from keeping his looms operating.

(*Continued on Page 40*)



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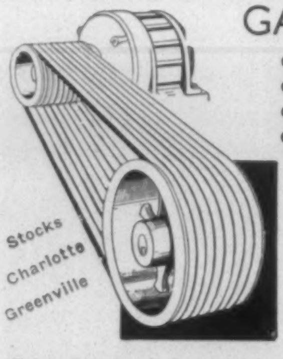

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Cotton Goods Markets

New York.—Sales of cotton gray goods have been comparatively light recently, as a result of several confusing factors that have come up for consideration. The pegging of combed yarn prices had its effect, cotton is uncertain, developments in Europe cast a shadow.

The threat of price ceilings is thought to have been strengthened by the declaration by the President of an all-out emergency, and this prospect is not generally regarded as a stimulus to continued forward purchasing.

Cotton market observers seem to be of the opinion that the concrete results of the emergency proclamation will probably be revealed gradually and this viewpoint is also noticeable among cloth merchants.

If priorities are to be hastened the opinion is that industrial textile departments will probably be the first affected. Forecasts would be futile at this time, since everything depends upon how rapidly the defense effort is pushed and in what direction.

Regarding the possibility of an extension of price ceilings, many merchants are of the opinion that this was up to mills as much as the government. If the markets are capable of maintaining a stability around present levels the government may be content to accept the status quo.

On the other hand, if sellers are short-sighted enough to encourage price advances beyond reason, even if only in the shape of gradual inching-up, they face the danger of having ceilings imposed at any moment. And the probabilities are, according to this viewpoint, that the maximums would be below today's levels. However, it is likely that there will be little action until Mr. Henderson has had time to observe the effect of the price pegging in the combed yarn industry.

Meanwhile, the converting divisions of the trade are watching the trend of distribution more closely and the reports now current indicate a continuation of the favorable trend of recent weeks and months.

In a confusing situation such as is now in effect, mills must make an effort to prepare themselves for any eventuality that might arise. Cotton may continue to go up, wages will likely have t obe adjusted upward, there is always the possibility of price pegging, taxes are going up surely, and extension of the army may begin to make serious inroads into the labor supply.

J. P. STEVENS & CO., Inc.
Selling Agents
40-46 Leonard St., New York

Cotton Yarn Markets

Philadelphia.—The bombshell dropped into the combed yarn industry by Leon Henderson, pegging prices at levels generally considered too low for comfort, was not entirely unexpected but it has had the effect of practically stopping trading until mills and buyers are able to take better stock of the situation. What the final outcome of this action will be is, of course, speculative, and depends on more factors than perhaps Mr. Henderson took into consideration when imposing the restrictions.

One thing only is certain—the entire industry using sale yarns is sure to pass through a period of uncertainty and confusion. Contracts are being delivered at prices under the maximum set, but other contracts for future delivery at higher prices must be adjusted. Wage rates are going up, labor is becoming more scarce and less efficient workers must be put on jobs that call for more skill than heretofore. No one can say what the raw cotton market will do, and a considerable portion of the cotton-growing South is now suffering from one of the worst drouths in many years. Cotton that is out of the ground now has not been seriously affected, but seeds are practically dormant in the drouth area, and unusual weather conditions during the remainder of the growing season may have a decided effect on the outcome of this year's crop.

Another confusing point, that must be worked out in some manner, is the quality of yarn to which the maximum applies. Certainly all 30s/1 combed yarn is not the same, and there are many variable factors of cost in producing the finest yarns as against the medium or poor yarns which may be entirely suitable for the purpose to which they are put. Mr. Henderson may find that it is much more simple to issue a price schedule than it is to control the repercussions resulting.

Another angle that may not have been sufficiently considered before the price pegging edict is the matter of deliveries. If an underwear mill, for example, is badly in need of yarn for supplies to fulfill a contract, it will be difficult for the mill to offer any incentive to a yarn producer to expedite deliveries. If yarn mills are sold up comfortably, and could accept additional orders only at increased operating costs, they will perhaps turn a deaf ear to pleas for deliveries unless they would be compensated for the increased costs. At present they are not compelled to accept orders above their normal capacity. Where it all will end nobody knows, but there are many headaches in store for both mills and buyers.

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Selling Agents
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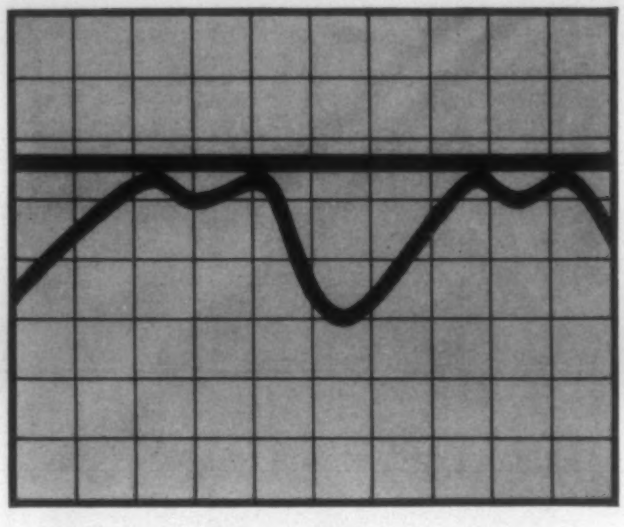
Southern Representative
T. HOLT HAYWOOD
612 S. Main St. Winston-Salem, N. C.



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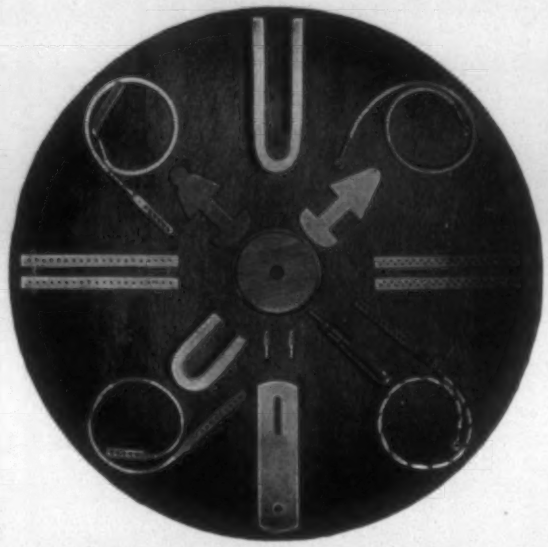
Rice Dobby Chain Co.



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Some Suggested Improvements in Efficiency Engineering in the Textile Industry

(*Continued from Page 37*)

Breaks Will Not Occur On Schedule

An automatic loom is automatic to the extent that, once the power is thrown on, it will run indefinitely unless a warp thread breaks, the filling thread breaks or runs out, or the loom goes out of adjustment. By observation studies, on any type of fabric, we can determine a very fair average of the number of times the loom will stop in a day. But yarn is of such a nature that we cannot determine by any amount of study, when a stop from a break will occur. If it is found that eight stops per day are to be expected, we still do not know whether there will be one stop per hour for each hour in an eight-hour day, or all eight stops in any one hour.

If a weaver had but one loom to run and there were only eight stops per day, then he would be right at the loom when each of the stops happened, and there is no reason to doubt that he could do the necessary work in eight minutes. If the loom was stopped during the day, five minutes more, because of adjusting (and we did not consider other allowances that should be made), there would be total stops of only thirteen minutes out of the four hundred and eighty minutes available time. Under such conditions the loom could show a production of ninety-seven (97) per cent.

It is a fact, however, that when a weaver has two or more looms to run, there is an entirely different condition. The changed condition comes about through the possibility of another or several other looms stopping while the weaver is already working on one that had stopped previously. Then the time that the second loom is going to be stopped, is the time that it takes to finish working on the first loom, plus the time that it takes to get to the second loom, plus the time that it takes to work on the second loom. The time that a third, a fourth and other looms will be stopped, is easy to figure. If there are many times in the day when four looms are stopped at one time, it is safe to say that the weaver has more looms than he can run to advantage.

The time that is lost by a loom that is stopped while the weaver is working on other looms, we call *interference,* and it is this interference that limits the number of looms that can be run efficiently. For an example, we will show the following: When a weaver has a set of sixty looms there are times when five, ten, fifteen and more, are stopped at one time. If it takes the weaver one minute to start up a loom, then the fifteenth loom will be stopped at least fifteen minutes. With sixty looms there are 1,770 combinations of two looms taken at a time, 34,220 combinations of three looms taken at a time, 487,718 combinations of four looms taken at a time, etc. There are all of these possibilities of more than one loom being stopped at a time and they must be taken into consideration in figuring how many looms a weaver should be asked to run.

It is impossible for anyone to study interference accurately on very many looms. To study it on a limited number will not help us if we are reasonably sure an operator can run a greater number. The conditions will be so changed by adding one or two more looms, that the information we already have will be without value. But while it is impossible to study the interference of a large number of machines, it is possible to figure it quite accurately for any number. To figure it, we need only have from a detail study: 1. The time that it is necessary for an operator to work on one machine when there is no interference from others; 2. The actual time that it is possible for the machine to run; 3. The production that the machine would then show.

After years of study we have developed a formula, based on the laws of probability, which we call "*Lucey's Method of Figuring Interference on Multiple Machine Jobs.*" This formula applies fully as well to spindle jobs as to machine jobs. By showing us the interference time must be allowed for any number of looms, the formula is an aid to our judgment in determining the number a weaver should be asked to run. But the correct measure, as we will show later, will always be the cost of producing a yard of cloth or a per cent of production.

As we realize that most people would not care to follow a detailed explanation of a study, or a complicated method of figuring, we will give some examples in dollars and cents, that can be easily understood. But before doing so we must make clear what we mean when we speak of a definite percentage of production.

Leave Looms Running At End of Shift

Whether the weaver has been assigned sixty, fifty, forty, or twenty looms, eighty per cent is a high production for any mill, where rates have been set by the usual method, and many mills do not get eighty. A much higher production is often claimed but every time that we have made a check-up, we have found something about the method of figuring that explained the difference. Some mills require the weaver to leave his looms running during the noon hour, and again when he goes off at the end of the day. Then a watchman shuts off those still running, an hour or even two hours, later. If the production is then credited to an eight-hour day or a forty-hour week, it is evident that a high percentage can be shown. In other mills a check is made once a day to show the number of looms running. If a warp is out the loom is shown as not running for the day although it probably has been running and will be running again within an hour. In some mills we have found the loom speed to be higher than was used in figuring possible production. In speaking of production of a weaving department of a mill we refer to all of the looms, with no time out for warp changes, pick outs, or loom fixing. We also figure picks thrown or yards woven against what is possible for the total time run and not just part of it.

If a weaver earns three dollars and fifty cents per day or roughly six cents per loom per day while running sixty looms, and the loom expense is two dollars per day, then the cost per loom per day is two dollars and six cents. With a production of eighty per cent, the cost of *one per cent* of production is two, point, five seven five (2.575) cents.

If the same weaver can get ninety per cent production if he runs forty looms, then the cost per loom per day is two dollars and eight and three-quarters cents. And the cost of *one per cent* of production is two, point, three one eight (2.318) cents.

In case the weaver cannot get ninety per cent production if he runs more than thirty looms, then it will pay to have him run thirty. The cost per loom per day with a thirty loom stand is two dollars and eleven and two-thirds cents. And the cost of *one per cent* of production is two, point, three five three (2.353) cents.

By the same method of figuring, it can be shown that on types of fabrics which show few loom stops per day, it is a paying proposition to limit the looms sets to the number on which a weaver can show a production of ninety-three (93) or even ninety-four (94) per cent. A production of ninety-five (95) per cent on a multiple-loom job of more than ten looms, can be shown to be next to an impossibility, as the interference time per loom would have to be cut down to a figure not greater than the weaver's working time.

It must be understood that the figures used for weavers' earnings per day, and for loom expense, are not actual figures and that they were used only for the purpose of example. Both of these figures will vary greatly from

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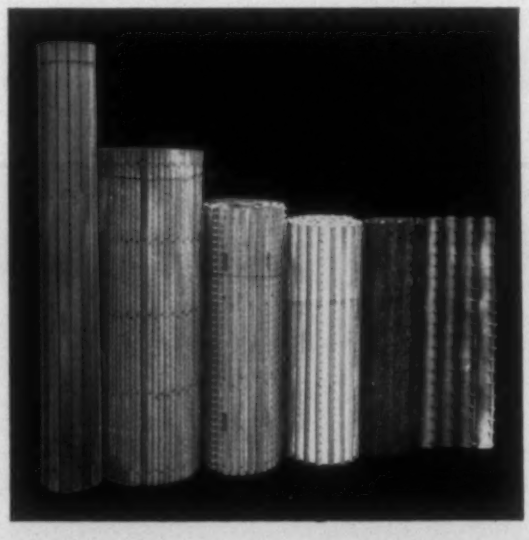


section to section and from mill to mill in any specific section.

By such examples it can be shown that neither the wage cost nor the amount of work that a man can do in a day, is the determining factor in deciding how many looms a weaver should run. The getting of a high percentage of production and the extent to which the weaver's work can be made available for use, so that the looms will be stopped for only the shortest possible time, are far more important factors. If by limiting the number of looms in a weaver's set, there is left free, an amount of time when all his looms are running, it can be put to very good use. Most any amount of time spent behind the looms is worth while, as clearing warps at the leases, trimming long ends from knots, and removing slubs, will cut down the number of breaks and improve the quality of the cloth.

As correcting the mistakes of the "multiple loom system" will bring an advantage to all parties, it should not take long to bring about a happy solution of a bad situation that should never have been started. The mill owners can get a production increase of ten or more per cent, without an increase in investment, and can at the same time get all production at a lower cost per unit. The weaver can go back to weaving again, and not be confined to a routine job of knot tying. The public will be benefited, as it should be possible to put fifty per cent more weavers to work and in that way, relieve unemployment.

It is our belief that the most important problem that the textile industry has ever had to face will come to the front during the next few years. That problem is the one of bringing up the wage scale from near the very bottom, to the level of the other large industries of the country. We are convinced that it would be to the best interests of the mill owners to take the initiative and form plans to gradually bring it about. If they do not do so, then there will surely be action by the workers to force a change. Under such conditions there will be heavy losses from long shutdowns. And no matter how hard it is fought we believe that the change is inevitable.

The latest report of the Bureau of Labor Statistics (Department of Labor) gives figures for the month of October, 1940. In a list showing ninety (90) classifications of manufacturing, the wages for cotton goods was next to the lowest. The average for all manufacturing was 68.3 cents per hour and that for cotton goods was 41.4 cents.

Mills Paying Wages in Line With Income

We are certain that the changes which will have to be made could not have come from the mill income of 1939 or 1940. Most mills were already paying close to the limit possible in total wages. Therefore it was plain that increased wages would have to come from increased income, and increased income would have to come, partly from correcting the mistakes of labor extension, but mostly from a higher price for product.

Most people do not realize how small an increase in price of fabric it would take to pay a very large increase in wages. In other words, they do not know what a small part of selling price wages really are. For the year 1939 the relation of total wages to value of product in the cotton goods industry, as shown by the Census of Manufactures (Department of Commerce), was 25.04 per cent. Over a period of many years the relation was 21.2 per cent. It is of course a fact that this percentage figure will vary with the price of raw material. When the price of cotton is high, the wage percentage is low. As the figures given above were for the whole country, wage figures for the South would be less. Total wages include foremen and many other indirect workers who would not necessarily be included in any raise to direct workers. Therefore the percentage of wages of direct workers to value of product would be still less.

If we assume that wages are twenty-five (25) per cent of the value of the product, then it is plain that an increase of as much as fifty (50) per cent in wages would affect the value of the product by only twelve and one-half (12½) per cent and an increase of twenty-five (25) per cent would affect it by only six and one-quarter (6¼) per cent.

When the price of cotton goes up or when there is a general advance in commodity prices, increases in the prices of cotton goods are expected and usually follow. The New York brokers' market price of 64×60 (5.35 yard) print cloth was 6½ to 6⅝ cents per yard on March 14, 1941, and was 4⅞ cents on March 15, 1940. On the same dates 15/16 middling cotton was 11.10 cents per pound in 1941 and 11.10 cents per pound in 1940. Therefore, with no increase in the price of cotton, print cloth has increased 33-1-3% in price and there has been a very similar increase in other cotton fabrics. Presumably, the advances were due to the general increases in wholesale commodity prices and to supply and demand. Wholesale commodity prices for industrials (U. S. Bureau of Labor Statistics) were shown at 130.8 on March 14, 1941, as compared to 116.4 on March 14, 1940. The New York Times index of business activity shows cotton mill activity at 148.8 on March 8, 1941, as compared with 116.5 on March 9, 1940.

Maybe all of the increase in price of cotton goods to date was needed to give the mills a fair profit and help them recoup some of their past losses. If that is so, then an additional increase of only three tenths (.3) of one cent per yard to give the workers a wage increase of 25% or an increase of six tenths (.6) of one cent to make a wage increase of 50% would put the wage position of the industry about where it should be.

A check-up of the price of fabrics in the hands of the converter, the cutting-up trade and the department store will prove that they have all added sufficient margin to cover expenses and leave a profit for themselves. It surely would be better for all of us if the mills could receive a price that would leave them a good profit after paying wages comparable to those paid in other industries.

Wage and Hour Regulations Discussed At Reidsville Meeting

(*Continued from Page 16*)

Frank Crane, Inspector, N. C. Department of Labor, Raleigh, N. C.: Yes, sir, 5½ per cent. And on the coal Mr. Shuford, it is the actual cost.

Mr. Shuford: Actual cost, yes, which includes the cost of handling.

Mr. Crane: Yes, with the overhead and everything in there.

Question: It is the cost of the coal with the overhead and the handling included in there?

Mr. Crane: Yes—any reasonable cost.

Mr. J.: I remember a case that came up where an employer was charging a boy $10 a week for board, whereas it was costing him only $5 a week to feed the boy. He was doing that in order not to have to pay out any money to the employee.

Mr. Shuford: Gentlemen, I have seen cases where employees in textile mills never got any actual cash. I have known instances, some few years ago, where an employee would go to a store and buy a carton of cigarettes for $1.50 and go out and sell it for 80 cents, just in order to get a little cash. That occurred in some other industries, too.

Mr. Crane: Mr. Shuford, in that matter of deductions, the law includes not only the mill itself but any person related to or connected with it. I have known of a case where the superintendent owned the coal yard, and if you worked in the mill you had to buy coal from him. His reasonable cost went up very high, too.

Mr. Shuford: This matter of deductions is a troublesome one to us, and it is troublesome to you if you indulge in it. My hope is that if any of you have indulged in permitting deductions for various and sundry things you will stop it as far as possible. That will make for better relations between you and your employees and will avoid a lot of trouble.

Question: What about cash advances? Suppose a man comes and asks for an advance of four or five dollars? That can be deducted from his pay, can it not?

Mr. Shuford: That is all right, if you do not charge him interest on it. Don't give him four dollars and then take five from his pay envelope.

Mr. K.: Can we get learners' permits from the State Department of Labor?

Mr. Shuford: The new agreement, which we hope to sign next week, gives us authority to handle permits, too. It will take us a little time to get it set up, because we have to employ some personnel, but it will not take long.

Mr. K.: Shall you handle permits for handicapped workers, too?

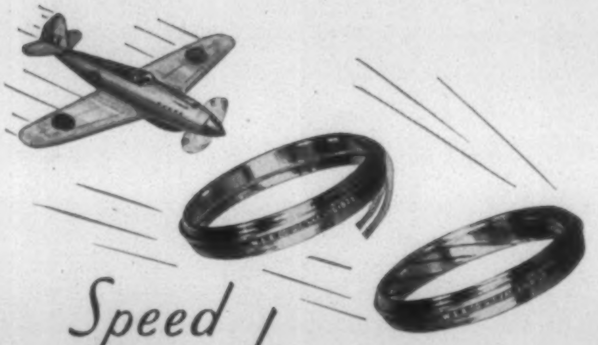
Mr. Shuford: I think so. I may be in error about that. We will handle certificates under a certain section of the law, but I am not sure that handicapped workers come under that section.

Mr. L.: We have some old employees; there is nothing wrong with them except that they are just old. They want to keep on working, but they cannot make the minimum wage. Do we have to lay them off?

Mr. Shuford: Sometimes they are handicapped—handicapped by disease or on account of poor sight. You are from Virginia?

Mr L.: Yes, sir.

Mr. Shuford: I have been talking about North Carolina. You have a regional office in Richmond which issues learners' permits, or learners' certificates—Mr. Cole's office.



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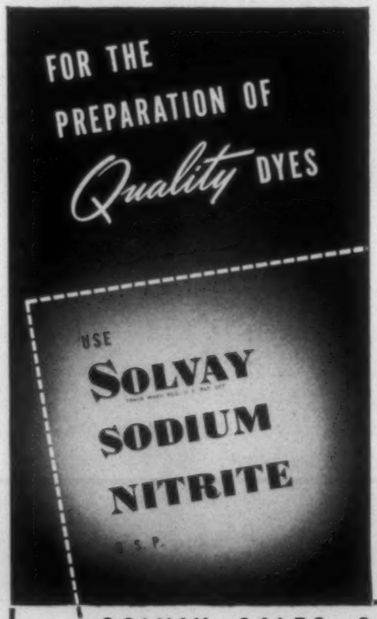

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Mr. L.: That is just recently?

Mr. Shuford: Fairly recently, yes, sir.

Question: What about insurance deductions from the payroll?

Mr. Shuford: That is all right if no one makes a profit on it.

Mr. M.: How about doctors' bills and hospital bills? Is it permissible to deduct for them?

Mr. Shuford: It is all right, but don't let the doctor pay you 10 per cent for making the collections for him. I mention that because in some sections a practice had grown up of having the company deduct the doctor's bills and then the doctor paid the company 10 per cent.

Mr. M.: Suppose the doctor is a stockholder in the company?

Mr. Shuford: I don't think that would make any difference if he was charging the employees only what he charged everybody else.

Mr. N.: Suppose there is a credit union of the employees and the company deducts from the pay envelopes the installments due on loans. There is a profit to the credit union. What about that?

Mr. Shuford: It is all right if it is really an employees' credit union. Have you that come up, Frank?

Mr. Crane: We did have one that was owned 50 per cent by the president of the company and 25 per cent by the superintendent and the remainder by two of the overseers. We checked on that and found that was true.

Mr. N.: That was not really a credit union, then. In the case of a credit union anybody can belong.

Mr. Shuford: I am not very familiar with credit unions. Ordinarily, do company officials own stock in credit unions?

Mr. N.: They can own stock in the credit union only to the same extent that any other employee can. No individual, whether he is a doffer or is the president of the company, when he reaches that limit can get any more. And that share entitles him to only one vote, whether he is a sweeper or is the superintendent.

Mr. Shuford: Mr. Crane, have you run into anything like that?

Mr. Crane: In that instance I spoke of the organization did not have a charter.

Mr. N.: It was not a bona fide credit union, then?

Mr. Crane: No. Of course, if it was bona fide and chartered and everything like that, I do not see why it should not stand scrutiny.

Mr. O.: To go back to the Wage and Hour Law, suppose someone comes in and claims that he had to work overtime and was not paid for it and he brings in several witnesses to say that he did, and your records show that he did not put in any overtime. How do you prove it?

Mr. Shuford: Well, it calls for difficult investigation, but there are usually enough substantiating factors one way or the other to prove it. I remember one instance where one employee claimed he worked overtime and had not been compensated. The inspector after talking with many other employees felt satisfied that overtime was not being worked by this employee. It was not a time when business was rushing.

Mr. O.: We have no way of proving that the man did not work overtime except by the timekeeper's records or the second hand's records.

Mr. Shuford: Yes, certainly. We run into a situation occasionally, gentlemen, where the foreman or second hand is anxious to get production and allows the employees to work overtime and the officials may not know anything about it. You should exercise pretty careful supervision; that is, from the official in charge down through the plant. The need for that should be impressed on foremen and second hands. It is important for two reasons; as I said in the first place it is the law; and second, it is important from the standpoint of your relationships with your employees. Think about this seriously. Most of the labor disputes that we have are with dissatisfied employees. Frequently dissatisfaction comes from rather trivial things. At least three out of five disputes arise from acts of overseers or second hands which officials of the plant may not know about. Sometimes the overseers do these things in order to make a good production record for themselves.

Mr. P.: If you have 70 looms to start up, how long before the whistle blows should the weaver be allowed to begin starting those looms up?

Mr. Shuford: That is a question which can only be answered by saying that the law provides a 40-hour work week without the payment of overtime. How long does it take to start up 70 looms?

Mr. P.: It takes one man about three minutes.

Mr. Shuford: If it takes him three minutes to start up his work I do not think you are justified in saying that he should begin three minutes before the whistle blows.

Mr. Q.: Say a man has two hundred employees in his department and carries a surplus of about 10 per cent. It takes that many to operate normally. Suppose on one day there are 15 extra employees whom he has to get out of the plant after starting time. How long do you think it is reasonable for him to have to get those employees ou of the plant without having to pay them? They do not work at all, you understand; they just come to see if there is any work.

Mr. Shuford: What would be your opinion?

Mr. Q.: Well, I think in 10 or 12 minutes he could get them out.

Mr. Shuford: I think that is reasonable if it occurs only once. But if you keep them that long every day or even one day every week, you will run into trouble. You will probably cut down your extra help, however, if you find that true.

Mr. Q.: Cotton mill folks do not want to work every day, and we have to have surplus help.

A Member: Where you have women employees you have to have surplus help, because they have to stay out sometimes on account of sickness and for other reasons.

Mr. R.: Suppose a woman who is a spinner gets off her job at the end of her shift and goes down and helps her husband, who is a weaver. So far as the overseer of

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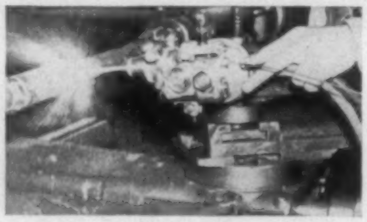

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spinning knows, she is not in the mill. Would you have to pay her if she made a claim for that time?

Mr. Shuford: Why wouldn't the overseer of weaving know something about that?

Mr. R.: Well, maybe the weave room is on two floors. The overseer may just have visited one floor, and the woman comes in right after he has left.

Mr Shuford: Wouldn't you, where you have such a large weave room, have a responsible second hand or someone else who could check on that?

Mr. S.: You cannot watch everybody all the time.

Mr. Shuford: No, but if you establish certain policies and adhere to them, soon you will not have to watch the people so much. Since we have been doing this, which is over a year, I recall only one textile plant where allegations were made by employees that they went into some other department of the mill and helped some other member of the family do his work. So evidently that is not a general practice. In that plant it was not just one employee who did that.

Mr. T.: We have had the experience of having some member of a family work on the first shift and another member of that family work on the second shift, and the one on the second shift will come in there 15 or 20 or 30 minutes ahead of time to see the other member of the family on the first shift.

Mr. Shuford: I think if I were running a mill I would not permit anyone to come in more than 15 minutes ahead of the beginning of the shift.

Mr. S.: That question would not come up, however, would it, unless the employee made a claim for that time?

Mr. Shuford: Very likely not, unless it happened frequently.

The Department of Labor is not a wage-collecting agency, nor is the Wage and Hour Administration, though some people have that idea because restitution of wages has been required. It is a violation of the law if you permit employees to work over 40 hours a week without paying them time-and-one-half for it. The penalty for violation of the law is legal action. The law does not authorize us to collect wages for employees. The law says the employees can sue, and some of them have done it. The law says they can collect not only the wages due but twice the amount of the wages due and a penalty.

It is the employee's prerogative to bring suit to collect his wages; we do not collect the wages for him. But, realizing that there were a great many violations of this Act which occurred through ignorance, through carelessness, through misinterpretation, and through one cause or another rather than deiberate intentional violation, the policy was adopted that if an employer has violated the law and wants to go back and comply with it he may do so and there is no penalty. So far as the Administrator is concerned, if there was not deliberate violation other action will not be taken. Our purpose is to secure compliance with the law. Incidental to that, an employee may sometimes get some back wages. But just because an employee makes a complaint does not mean that we try to get money for him. If our investigation shows that a violation has occurred and that it was not deliberate and intentional, and the employer wants to pay the back wages and comply with the law, all well and good. It is a matter of the collection of money, so far as we are concerned; that is just a secondary thing. Our objective is to secure compliance with the law.

Mr. S.: In that case last week where a company was fined something over $5,000, that decision definitely established the principle that a company is responsible for the acts of its second hands. That is the first time that has been established.

Mr. Crane: I should like to stress that when an employee catches a double shift you make a notation on your record of the reason why, so that the inspector will understand about it. We get around only once a year or so, and perhaps it will be a year after the occurrence before the inspector comes. By that time you will have forgotten why that man worked 16 hours, and he will have forgotten why. Make your notation in there, and that will assist us.

We do not want you to think of us as "suspectors" but think of us as inspectors. If you will make a notation in such a case as I have mentioned it will help you and help us. You cannot, some time later, recall what happened; the employee cannot tell you anything definite. You do not know why that man worked 16 hours in there. Later he may complain about it, and we have to investigate all complaints.

Mr. Shuford: It is highly important that complaints be investigated. If there is a violation of the law the employer should be informed about it; if there is not, the employee should be informed.

Mr. W.: Suppose a frame hand comes in a few minutes early and finds an end down and puts it up. Would you call that working?

Mr. Shuford: I do not think putting up one end would be called work. If an employee comes in early regularly and persistently starts work before his working time, that would be called working; but if he puts up only one end I do not think it would be counted.

Chairman Pegram: Gentlemen, we are certainly glad that so many of you came to this meeting today, and I know that all of us appreciate the very frank and helpful discussion that Mr. Shuford has given us, with the help of Mr. Crane. I am sure it has been very valuable to us all.

It is a pleasure to have with us Mr. Pipkin, of the Edna Cotton Mills. It is our hope that more of the mill officials will attend these meetings, because we need their help. Mr. Pipkin, have you anything to say to us?

Benton Pipkin, Treas., Edna Mills Corp., Reidsville: Mr. Chairman, we are very glad indeed to have this meeting here today in Reidsville. Reidsville is centrally located, and we hope that now the ice has been broken you will come back and hold some of your other meetings here. It has been very fine indeed to have been with you.

Chairman: Are there any announcements?

J. O. Thomas, Secretary of the Division, urged attendance at the general meeting of the Southern Textile Association, to be held in June at Myrtle Beach, S. C.

The meeting then adjourned, at 12:20 o'clock p. m.

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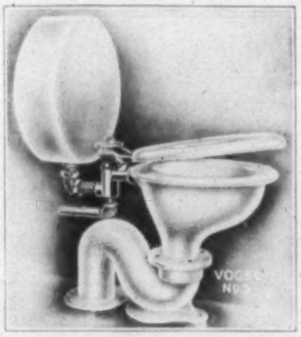

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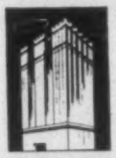

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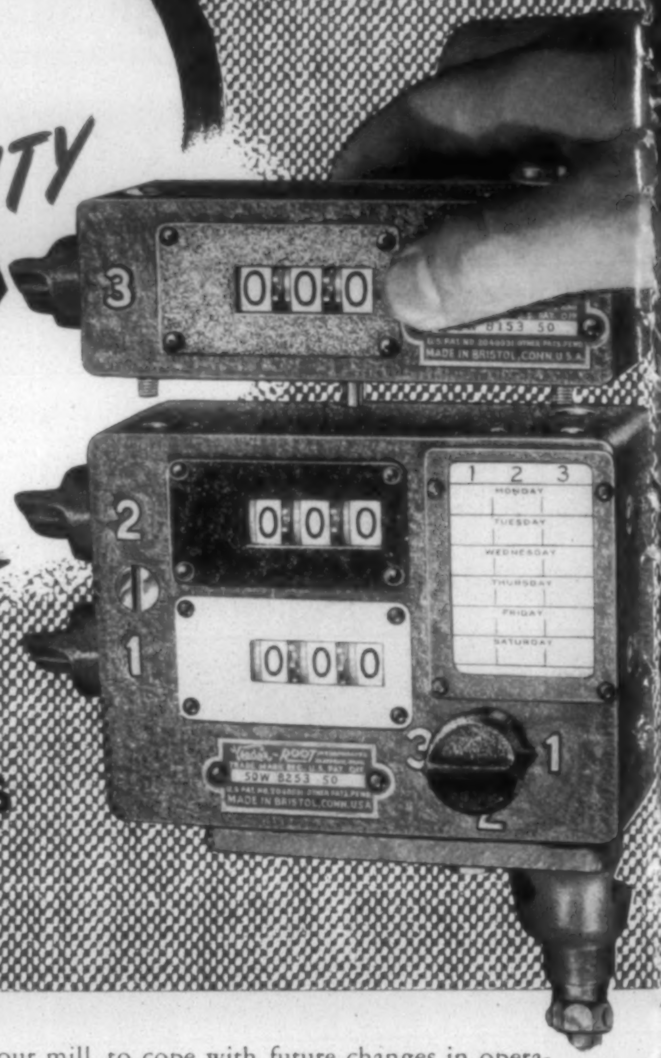

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